Pests
AND THEIR CONTROL

1947
NOVEMBER
VOL. 15, NO. 11

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators
Fumigators
Termite Control Operators
Entomologists
Insecticide and Supply Mfgs.

ANNOUNCING COOK'S
All-Purpose PCO Concentrate

COOK'S HAS NOW PERFECTED, after exhaustive field tests, an All-Purpose Concentrate which contains "refined" Chlordane (for a lasting residual kill) *plus* "activated" Extane (for quick knock-down) . . . *to be mixed with WATER or PETROLEUM SOLVENT.*

NO NEED TO CARRY BULKY MATERIALS! Most industrial jobs can be treated effectively by mixing ON THE JOB with water. Your operator can "tailor-make" his spray for each job by adding WATER or SOLVENT on the job. (1 gallon Concentrate makes 8 gallons of spray.) This All-Purpose Concentrate will solve all of your roach and pest control problems.

COOK'S All-Purpose PCO Concentrate

Fly-proof and roach-proof in one application, using Cook's All-Purpose PCO Concentrate containing "refined" Chlordane plus "activating" Extane. Mix 1 part Concentrate with 7 parts water or solvent.

1-gal. cans (4 to case)	$6.50 per gal.
5-gal. cans	6.25 per gal.
50-gal. drums	5.95 per gal.

20% (Chlordane) Concentrate

This is 20% by weight. To be diluted 9:1 with deodorized petroleum solvent.

Gallon cans (4 to case)	$4.50 per gal.
5-gal. cans	4.25 per gal.
50-gal. drums	3.95 per gal.

50-E (Chlordane) Emulsion Concentrate

To mix with water. For industrial and vegetation use. Kills roaches, waterbugs, grasshoppers, mites, chiggers, red bugs, and certain other insects. Contains 4 lbs. Chlordane per gallon.

1-gal. cans (4 to case)	$10.00 per gal.
5-gal. cans	9.75 per gal.
50-gal. drums	9.50 per gal.

5% Chlordane Dust, 100-lb. drums	.17 per lb.
50% Chlordane Wettable Powder, 100-lb. drums	$1.25 per lb.

BEWARE: There are two grades of Chlordane on the market today — "agricultural" grade (it stinks and stains) and "refined" grade (practically odorless and stainless) . . . costs more to make. Cook guarantees its 20% Chlordane Concentrate and All-Purpose PCO Concentrate made from "refined" Chlordane. Don't take chances.

Mail Orders Direct to

COOK CHEMICAL COMPANY
2020 Wyandotte
KANSAS CITY 8, MISSOURI

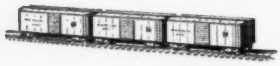
BASIC CHEMICALS

GENERAL CHEMICAL COMPANY

FOR AMERICAN INDUSTRY

DDT

BHC



For Insecticide Manufacturers • Compounders • Mixers

DDT
Dichloro-diphenyl-trichloroethane

Technical—Ground or Flake
(89° Min. Setting Point)

50% DDT Wettable Powder, Micro-Fine
(Genitox* 550)

50% DDT Dust Base, Micro-Fine
(Genitox D50)

Emulsifiable Oil Concentrates
(Genitol† EM25 and EM30)

Solvent Concentrates
(Genitol SC30 and SC40)

BHC
Benzene Hexachloride

Technical Grade

Dust Base (Finely Milled)

Wettable Powder

Dust Mixtures

Oil Concentrates

†Trade Mark, General Chemical Company
*Reg. U. S. Pat. Off.

From General Chemical Company's extensive producing facilities are flowing a wide range of DDT and BHC products for manufacturing and compounding insecticides. These basic chemicals for the insecticide industry are readily available both as technical grade raw materials and in specialized formulations.

Into their manufacture has gone extensive investigational work, and all the skill and experience gained by General Chemical in nearly 50 years as a leading producer of insecticides.

Whatever your requirements—whether you are making a product for agricultural or household uses—you will find General Chemical Company can meet your needs. To be certain of your source of supply . . . contact General Chemical. Write or phone the nearest Sales and Technical Service Office below.

GENERAL CHEMICAL COMPANY

40 Rector Street, New York 6, N. Y.

Makers of the Nation's Foremost ORCHARD BRAND SPRAYS • DUSTS *Insecticides and Fungicides*

Sales and Technical Service Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles Minneapolis • New York • Philadelphia • Pittsburgh • Portland (Ore.) • Providence • San Francisco Seattle • St. Louis • Wenatchee • Yakima (Wash.)
In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

NOW— BETTER THAN EVER

THE MOST VERSATILE PEST CONTROL MACHINE TODAY

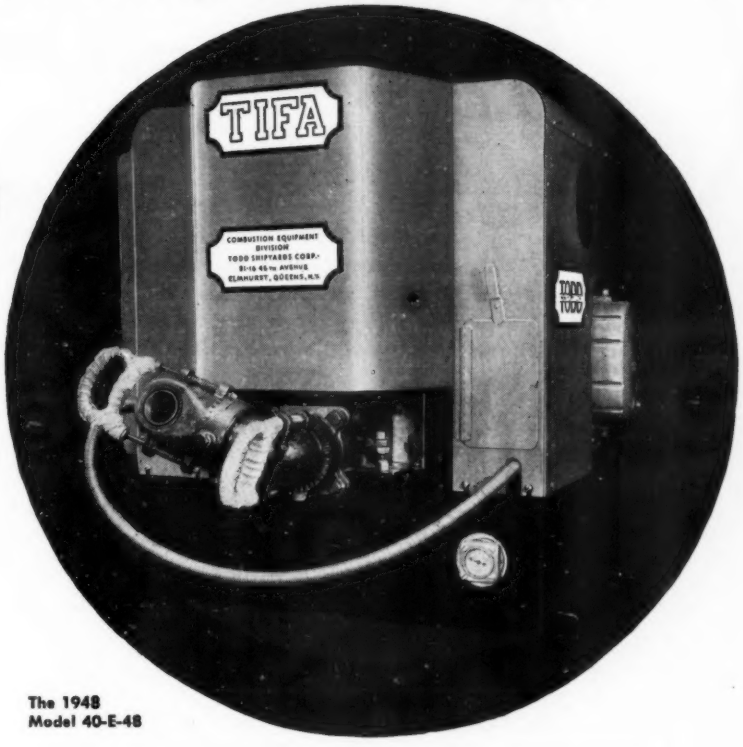
TIFA *DEATH-DEALING FOG FOR INSECTS*

• Compact, streamlined, mechanically improved, the 1948 model of TIFA, is more efficient, more economical, easier to handle.

Exhaustive tests have shown that the TIFA machine does its control work better than any other known method . . . and with considerably less manpower, materials and time.

On farms and ranches, in recreational areas and orchards, on garbage and fill dumps, including indoor and outdoor spaces, TIFA effectively controls insects, fungi weeds . . . applying the newly developed chemicals, as well as the old . . . *of the selected particle size in a true fog.*

TIFA has earned its "E" — for efficiency and economy. TIFA is portable . . . is built to last. Put TIFA to work for you now — and earn immediate dividends.



The 1948
Model 40-E-48

Some *New* Features of the 1948 TIFA

- Belt Drive
- Choice of Gas Engine
- Elastic Stop Nuts
- Prime-less Pump
- Flexible High-Pressure Connections
- 5-hour Gas Tank
- Insecticide Pressure Control
- Rubber Mountings for Quieter Operation
- Solid-Open Top Section

TIFA

Write for new circular

TODD INSECTICIDAL FOG APPLICATOR

TODD NEW YORK, U.S.A.

A Product of

COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

81-16 45th Avenue, Elmhurst, Queens, N. Y.

8 REASONS WHY YOU SHOULD USE PESTMASTER COLLOIDAL DISPERSION 40% DDT

PESTMASTER Colloidal Dispersion 40% DDT is a brand-new and most effective form of DDT. It is a creamy, white, water-base formulation that remains in suspension without agitation. It provides the fast, sure insect pest control that builds your reputation as an efficient exterminator—more new business—more profits! PESTMASTER Colloidal Dispersion 40% DDT saves you time, trouble, and money—and here are 8 reasons why.

EASY TO PREPARE. Just mix with water to obtain spray of desired strength. Other ingredients can be added as desired. No oils, no muss, no fuss.

NO UNSIGHTLY RESIDUE. Silver residue is practically invisible owing to fineness of DDT particles and absence of inert solids.

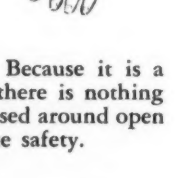
SAFE FOR YOU. Safe to handle, safe to apply, because it cannot irritate nor be absorbed by the skin.

QUICKER KILL. Uniform dispersal of extremely fine DDT particles assures a highly effective residue that kills insect pests on contact.

NON-FLAMMABLE. Because it is a water base product there is nothing to burn and can be used around open flames with complete safety.

EASY TO APPLY. Will not clog spray equipment. Substance remains continually suspended requiring no agitation in dilute form, providing smooth, efficient application.

SAFE FOR ALL APPLICATIONS. Use it in homes, hospitals, factories, public buildings, on plants, livestock — on any surface not harmed by water. Do not apply to wall paper or calcimined surfaces, as water will stain.



PESTMASTER Colloidal Dispersion 40% DDT is made by the manufacturers of the complete PESTMASTER line of tested, proven insecticides for home, industry, and agriculture, and Master Brand Methyl Bromide. Write for complete particulars

NO DISAGREEABLE ODOR. Contains practically no oil, carries no objectionable odor.

in DDT—it's PESTMASTER!

MICHIGAN CHEMICAL CORPORATION
SAINT LOUIS, MICHIGAN
New York Office: 230 Park Ave., New York 17, N. Y.

Pests

and Their CONTROL

Exterminators, Fumigators, Termite Control Operators, Entomologists, Insecticide and Supply Manufacturers

COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

AL COSSETTA, *Editor*

MAX ROSENTHAL, *National Advertising Representative*
120 Liberty St., New York City 6, N. Y. Ph. Be. 3-5919

PUBLICATION OFFICE, 1200 OAK ST., KANSAS CITY 6, MO., PHONE VICTOR 6332

VOL. 15, NO. 11 | NOVEMBER, 1947 | ESTABLISHED 1933

NATIONAL PEST CONTROL ASSOCIATION, INC.

OFFICERS AND DIRECTORS

October 1946—October 1947

PRESIDENT

J. Harvey Sturgeon, 612 E. Broadway.....Louisville 2, Ky.

REGIONAL VICE PRESIDENTS

H. O. Abel, 4320 Ross Ave.....Dallas, Texas
J. Edwin Sameth, 1060 Broad St.....Newark 2, N. J.
V. H. Montgomery, 1161 Post St.....San Francisco, Calif.
Harold E. Jennings, 37 S. Wabash Ave.....Chicago 3, Ill.
Glenn H. Burnett, 92 Plaza Way, S. W.....Atlanta 3, Ga.

SECRETARY

William O. Buettner, 3019 Ft. Hamilton Parkway.....Brooklyn 18, N. Y.

TREASURER

Robert C. Yeager, 100 East Court Street.....Cincinnati 2, Ohio

DIRECTORS

Three Years—1946-1949

I. B. Carncross, 802 E. Fayette St.....Syracuse, N. Y.
Charles C. Delk, Box 1093.....Fresno 14, Calif.
Charles Denny, 19 W. Big Bend Road.....Webster Groves 19, Mo.
Louis Gatto, P. O. Box 65.....Beaver Falls, Pa.
Jaques J. Hess, 9 West 29th St.....New York City
Charles Parlow, 1200 Morton St.....Lafayette, Ind.
Mark Weintraub, 272 Devonshire St.....Boston 10, Mass.

DIRECTORS

Two Years—1946-1948

Jerome L. Howell, 2403 S. Main.....Houston, Texas
Albert M. Akers, 2122 E. 2nd.....Cleveland, Ohio
Morton S. Prescott, 129 S. Laflin St.....Chicago 7, Ill.
Martin T. Meyer, 213 S. 10th St.....Philadelphia 7, Pa.
D. C. Tracy.....Los Angeles, Calif.
George Hemmert, 436 E. Woodbridge St.....Detroit, Mich.
Herbert Meyer, 165-33 Hillside Ave.....Jamaica, N. Y.

DIRECTORS

One Year—1946-1947

Sidney Wimmer, 143 West 53rd Street.....New York, N. Y.
Henry Turrie, 512 W. North Avenue.....Milwaukee, Wisc.
Joseph W. Hahne, 3837 South 23rd Street.....Omaha 7, Nebr.
John Medoff, 445 63rd St.....West New York, N. J.
Mrs. Lavonne Rukin, 5955 W. 65th St.....Chicago, Ill.
A. S. Krawcheck, 101 South 20th Street.....Birmingham, Ala.
J. Wilfred Gunn, 2903 Beverly Boulevard.....Los Angeles, Calif.

CANADA

P. Henry Maheu, 3128 Masson Street.....Montreal, P. Q., Can.

PAST PRESIDENTS

William O. Buettner, 3019 Ft Hamilton Parkway.....Brooklyn 18, N. Y.
Thomas C. Raley, 1135 Pine Street.....St. Louis 1, Mo.
C. Norman Dold, 6 East Lake Street.....Chicago 1, Ill.
Bartlett W. Eldredge, 118 Calvary Street.....Waltham 54, Mass.
H. K. Steckel, 113 West Rich Street.....Columbus 15, Ohio
*H. G. Irving Sameth
*Walter S. McCloud
*L. R. Alderman
P. Calvert Cissel, 928 Eye St., N. W.....Washington 1, D. C.
F. E. Bohman, 173 Church Street.....Hartford 3, Conn.
George R. Elliott, 58 Front St.....Worcester 8, Mass.
Theodore Oser, 315 Peachtree St.....Atlanta, Ga.

*Deceased.

STATEMENT

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

For further details, communicate with
WILLIAM O. BUETTNER, Secretary
3019 Fort Hamilton Parkway Brooklyn, New York

CONTENTS

"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."

Editorials 6-7

Studies In Deratization of Surface Vessels by Means of 1080 (Sodium Fluoroacetate) 8
By John H. Hughes

The Poets' Hymenoptera: Part II—The Honeybee 14
By C. R. Twinn

Utilization of Tannery Sludge As An Insecticide and Fungicide 20
By Fred W. Walker, Jr.

The Extension Service and Pest Control Operations 22
By M. P. Jones

Rickettsialpox 24
By A. A. Fisher, M.D.

Income Tax Saving Facts 26
By Harold J. Ashe

Is This A New Idea 28
By Elmer Kuntz

Rutgers—NJPCA, Clinic 30

Local Organization News 32

What's New In Pest Control—Personals 34

Additional Patents Relating to Pest Control 38
By Dr. R. C. Roark

Calendar of Meetings 39

Write For These Booklets 40

Books 42

Published monthly by PESTS, 1200 Oak Street, Kansas City, Missouri. Subscription $4.00 per year, 2 years $6.00, 3 years $8.50. Publishers not responsible for unsolicited manuscripts. No manuscripts will be returned. All advertising copy and contributions must be in our hands by the 15th of the preceding month of the issue in which they are to appear. Three weeks' advance notice necessary for change of address. Both old and new address must be given. Entered as second-class matter November 15, 1945, at the post office in Kansas City, Mo., under the Act of March 3, 1879.

RETURN POSTAGE GUARANTEED

EDITORIAL

NPCA Convention Story

Because of press-time consideration, the convention story and other highlights will appear in the December issue.

Desirable Law

A MIDWESTERN PCO, in a letter to this publication, comes out against unregulated sale of proprietary rodenticides potentially hazardous to life and property.

In an alley to the rear of his place of business, he notes, there are plenty of rats, and nothing much has been done about it except for an occasional poison bait thrown out by someone, as a result of which several fine dogs have died, one only recently in his presence. Needless to say, he points out the property owner has refused to engage the services of a professional exterminator, which leads our PCO friend to urge: ". . . there should be some way to control the sale and use of poisons", a recommendation, he avers, he is not making "because it will plug a hole in my business."

That he has a case few, if any, conversant with the necessities of rodent control, will disagree. For the sale and use of rodenticides, if properly controlled, will help contribute not only to public safety but to reduce property damage as well.

Termites "Eat" Florence Hall

SUCH was another blazing caption appearing on the front page of the Evening Omaha World Herald, September 5, showing a large picture of John P. Linn, of Industrial Pest Control, Inc., Omaha, Nebraska, and the Omaha City Commissioner, Carl Jansen.

In the picture, John Linn shows the City Commissioner the area where termites destroyed a 2- by- 10 floor joist in the Florence Community Hall.

States Commissioner Jansen: "The termites have ruined most of the window sills, damaged the gymnasium floor, destroyed floor joists, consumed baseboards, and have had plaster for dessert. I understand that the city officials knew termites were in the building 10 years ago. They neglected the building and did nothing about it. I suppose the reason was—economy. Well, I call it false economy. Ten years ago the job would have cost a few hundred dollars. Now, after the termites have done their dirty work, the cost is going to be several thousand dollars."

Because of the condition and the results of "false economy", John Linn was awarded the termite contract. However, a few days after the above publicity appeared in the paper, another bold headline appeared in the same paper, stating, "Omaha Is Finally Termite Conscious." Now John Linn states that his "phone" is ringing off the wall since attention was directed to the termites.

A write-up of this nature with a picture appearing on the front page of this large newspaper was worth many dollars in gold. This story regarding the termites' damage as published was well publicized. The city in engaging a pest control firm recognizes the expert nature of our service which speaks well for our industry.

PCO's are Challenged Today as Never Before

"CITY BLITZ on Insects", "City Swats the Fly." Such headings and stories have appeared in recent newspapers. This is good for PCO's.

Such publicity in newspapers concerning vigorous municipal drives on insects is a challenge to all PCO's. With health officials emphasizing more and more the great need of waging constant battle against rodents and insects in various cities, PCO's will more and more be thrust into the lime-light before the public. Our industry will be linked with these drives in the public's mind. The public will not only become pest conscious but will recognize PCO service as a very vital and important part of any anti-pest crusade.

In order that PCO's may enjoy the prestige that they have been receiving through one form of advertising or another, let it be remembered that the paramount consideration in your service to the public, is to give the best you have.

"Kill Them All"

AN ARTICLE of the above title appears in the October 4 issue of "The New Yorker", material for which was based on an interview with Nathan N. Sameth, 81-year-old head of the Sameth Exterminating Co., of N. Y. In it Mr. Sameth offers a plan which he believes will liquidate the problem of rats and mice.

His plan in brief is to establish a "National Rat Commission, with health officers of every state as honorary members, to promote a war on rats. Then we form a parent company—a regular corporation, so there won't be any political nonsense—to provide advice, material and and assistance to all communitiees that ask for it. And, finally, we pass city and state ordinances oulawing rats and mice. This means that if you have rats or mice on your premises—and there would be inspections to check

up on this—you'll have to get rid of them or pay a fine. If you can kill them yourself, well and good. If you can't, you've got to hire somebody to do it. This wouldn't be one of those one- or two-week campaigns; it would be a ten or fifteen-year fight and would require the services of more than a hundred thousand men. Most of these could be veterans with some disability. A man with one eye or arm makes as good a rat killer as anybody else. These exterminators would be hired by local companies from the parent company!"

Worthwhile Cleanup!

"ONE OF the most important cleanup campaigns undertaken by New York City's Health Department is the present drive against unsanitary delicatessen stores," declares an editorial in the N. Y. World Telegram.

"Catering to millions in the course of the year and handling large quantities of the city's food supplies, the delicatessen stores have a direct bearing on the overall health picture," continues the editorial. Despite repeated warnings since May, Health Department inspectors found shockingly dirty conditions. Summonses have been issued in many cases and warning given in others. Generally speaking, the store owners show a willingness to co-operate. Fine and jail terms loom if they don't.

Health Commissioner Isreal Weinstein and his staff did an excellent job in forcing unsanitary restaurants and eating places to clean up some months ago. His job on the delicatessen stores should be equally as thorough and effective.

Morton S. Prescott

We regret to announce the untimely death of another outstanding leader of the pest control industry. Morton S. Prescott passed away September 20, 1947 following a critical surgical operation performed on September 12th at St. Lukes Hospital in Chicago, Ill.

"Mort" as he was known to us, served on several important committees and was Chairman of the Annual Convention held in Chicago, Ill., in 1944. He also was a Director and Officer of our NPCA. He rendered invaluable service to the industry. He operated and owned the Protex Service. Mort leaves a host of friends.

We express our sincere sympathy to his family.

Praise From Abroad

To Pests Magazine:

Making use of the opportunity, I wish to congratulate you very sincerely on the ever-interesting contents of "Pests". We have been subscribing to the paper since 1936. I do not hesitate to say that it is unique in our field as a source of information.

Dr. Walter Heerdt
Mussdorf AM Attersee, Oberosterreich

PCO Award to Brehm and Gilmore

An annual cash Scholarship award of $200.00, provided by the National Pest Control Association at its Cincinnati meeting in October 1945, has been awarded for the first time at Purdue University.

The award is made to the student majoring in Entomology at Purdue University who has completed at least two but not more than three semesters of college work and is based on the scholarship record for the two or three semester period, which counts 70 per cent, and on a General Knowledge Test, which counts 30 per cent.

In this first year of the award, ten students were eligible for the competition, and the scores were very close; in fact the two highest were .026 apart. In other words there was no statistical difference between the two and therefore the award was divided between them.

The two winners of the award were William Lyman Brehm, 4743 "A" Street, Philadelphia, Pa., son of G. S. Brehm of the Hygienic Sanitation Company of Philadelphia, and George Dudley Gilmore, Cooperstown, N. Y., nephew of L. A. Moore of Utica, N. Y.

The awards were made before some 500 students at the Freshmen Assembly of the School of Agriculture, October 6. The award was explained by J. J. Davis, Head of the Entomology Department and the cash awards were made by V. C. Freeman, Associate Dean of the School of Agriculture.

PCO Cash Scholarship Award presented at Purdue University, October 6, 1947.

Left to right—Dean V. C. Freeman, George D. Gilmore and William L. Brehm, winners of the award, and Professor J. J. Davis of Purdue.

Studies In Deratization of Surface Vessels By Means of 1080 (Sodium Fluoroacetate) *

By JOHN H. HUGHES, Senior Assistant Sanitarian (R), United States Public Health Service

RAT control on surface vessels has long received serious attention, particularly since the incrimination of the rat and flea in plague transmission. It has been given further impetus by the discovery that other rat-borne arthopods are vectors.

Ratproofing provisions have been incorporated into the construction plans of modern vessels with favorable results; but of course there are still many ships that offer rats an abundance of attractive harborage.

The United States Public Health Service has developed and utilized numerous methods of rat control on surface vessels, including fumigation with hydrocyanic acid gas, the use of traps, and the use of stomach poisons. Hydrocyanic acid gas fumigation has given the most satisfactory results.

Some new rodenticides were developed during World War II, and a search for others is being conducted at present. The compound "1080" (sodium fluoroacetate) is the product of an accelerated wartime rodenticide research program sponsored by the National Research Council. This compound has proved to be very effective for general rodent control. "ANTU" (alphanaphthylthiourea), another recently developed compound, reportedly is highly specific to the Norway rat, **Rattus norvegicus.**

In 1945 the Foreign Quarantine Division of the Public Health Service began a study to ascertain the potential effectiveness of new rodenticides in rat control on surface vessels. There follows a report of the developmental nature of the study of the 1080 compound in deratization and some results obtained, with pertinent information on the compound 1080.

The Quarantine 1080—Deratization Program

A few quarantine stations were advised of the proposed study. They were subsequently provided with information pertaining to the nature and use of the two rodenticidal compounds, 1080 (sodium fluoroacetate) and ANTU (alphanaphthylthiourea), and were instructed to place initial emphasis on the use of 1080. Because of the known hazards associated with the use of the poisonous compound 1080, it has been necessary to observe precaution in setting up and conducting the study.

Facilities available at quarantine stations lend themselves readily to studies of the nature being reported. Quarantine personnel are well aware of the rat-control problems. Carefully trained inspectors, many of whom have had years of experience in ship inspection and rat-control work, are available. One of the most desirable features is the study unit, the ship. Various activities aboard can be controlled to a large degree during deratization operations. This aids materially in the evaluation of the rat-control method employed. Fluctuation of the rat population during the course of the deratization study on a ship can be largely prevented. It is possible to account for the rats on a particular vessel with a fair degree of accuracy.

Procedure for 1080-Deratization Studies.

Vessels subject to quarantine inspection and treatment for rats are methodically examined by inspection crews for evidence of rats and for the nature and distribution of the infestation. Simultaneously with the inspection for rat evidence, pertinent observations regarding the cargo are made. The latter is very important and may preclude, or necessitate modification of, a particular control method.

When it has been decided to employ the 1080 compound on a certain surface vessel, the ship's personnel and others concerned are notified, through a responsible officer of the vessel, and advised of the hazards involved.

The rat-control crew, usually consisting of two or three of the men who inspected the vessel for rat evidence, then proceeds with the control measures.

The 1080 compound is a powder. It may be used in a water solution or with bait.

When used in water, one-half ounce or 14 gm. of the 1080 concentrate are dissolved in each gallon of water required. For the purpose of this program it was suggested that wax-coated squat paper cups of approximately 1-ounce capacity and chicken-watering fountains of 1-pint capacity be used in making the poisoned water available to the rats. The paper cups have been largely satisfactory, although other types of shallow containers are also being used. The fountain-type dispenser has been utilized to a lesser degree. Approximately three-fourths ounce of the 1080 solution is placed in each of the paper cups. This small quantity may be objectionable particularly when the evaporation rate is high.

Recommendations for baits are one ounce or 28 grams of 1080 concentrate for each 28 pounds of bait.

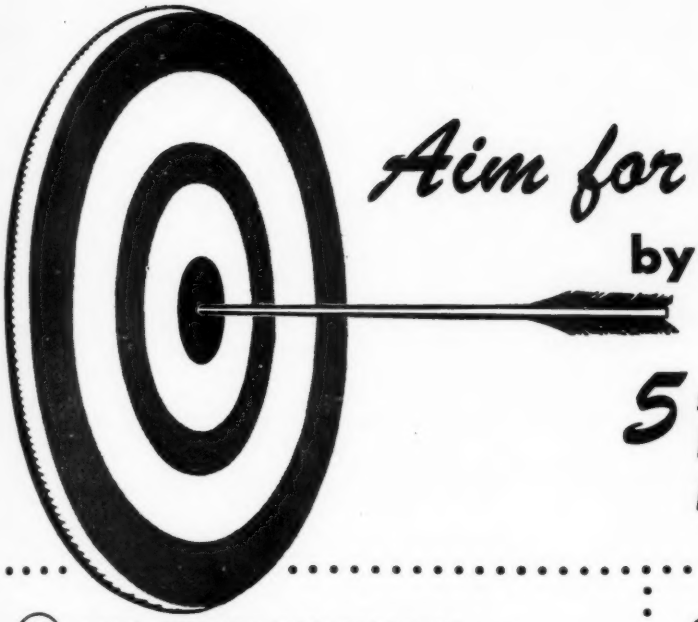
The poisoned water may be prepared at the quarantine station prior to the time needed, or on board the vessel to be treated. Some stations prepare measured quantities of the concentrate, sufficient for use in 1 or 2 gallons of water, and store it in vials or other suitable containers.

The use of a large number of poison stations in ship work is usually more effective than the use of a large quantity of poison solution or bait at a few points. The dispensers, plainly labeled as to poisonous content, are securely fastened at strategic points along rat runways and near harborages, preferably in protected places. Care is exercised in determining the areas to be treated and the number and types of dispensers to be used. One quarantine station is utilizing boxlike shelters in which to place some of the poison dispensers.

Ten-eighty poisoned water has been used on vessels treated in this quarantine program. Poisoned bait has been used on a few of the vessels, but only as a supplemental measure. When baits are used, it is very probable that some will be carried into harborages by the rats and eaten there. This would tend to increase the number of rats which die in places from which their recovery is difficult. Obviously, baits are more costly to prepare than the aqueous solution of 1080.

The 1080-treated ships are carefully searched for poisoned rats usually within 24 hours following distribution of the poison, and daily un-

* From the Foreign Quarantine Division.



Aim for Greater Profits

by using Quality Materials

5 superior products to help you do a thorough pest control job

(1) AERO BRAND* HCN DISCOIDS . . .

The most generally-used fumigant in the Pest Control industry. More dwellings, industrial buildings, railroad cars, ships and stored commodities are fumigated with hydrocyanic acid gas than with any other fumigant. Commercially pure hydrocyanic acid gas absorbed in thin cellulose discs. One-pound and forty-ounce containers readily accommodate dosage requirements. AERO BRAND HCN DISCOIDS are simply scattered from the can. No dirt or mess in application or clean-up.

Where insects and rodents are a problem in enclosed spaces AERO BRAND HCN DISCOIDS provide the answer.

(2) ACCOTOX* 50% DDT WETTABLE POWDER

A superior micron-sized DDT formulation having many advantages. Sprays of effective strengths are made economically. Instant dispersion and prolonged suspension in water mean ready mixing and even coverage. ACCOTOX does not penetrate wood or masonry but leaves sprayed surfaces lightly coated with tiny, jagged crystals which insects cannot escape.

ACCOTOX kills flies, fleas, mosquitoes, gnats, water bugs, American and Oriental roaches and many other pests. A *must* in servicing homes, bakeries, dairies, restaurants and food-processing plants. Sprayed on walls, floors, ceilings, refuse containers and vegetation, ACCOTOX is essential to complete Pest Control Service.

(3) CYANOGAS A-DUST . . .**

The ideal outdoor fumigant for "cleaning out" rat harborages in city dumps, sanitary fills, under sidewalks, tight floors and pavements, and in fields, along ditch banks and levees. Applied effectively and economically with the handy CYANOGAS Foot Pump.

Not a bait . . . CYANOGAS A-DUST liberates hydrocyanic acid gas *in the burrow*. ALL rats, adult and young, breathe the gas and die immediately. No dangerous residues to be picked up by unwary children or pets.

(4) ACRYLON FUMIGANT . . .**

The liquid "spot" fumigant used for the destruction of insects by direct application to food-processing machinery. Indispensable for servicing flour mills, bakeries and similar food-processing plants. Not a general space fumigant.

ACRYLON also has been used successfully to fumigate clothes closets and other small enclosures in the home and elsewhere. (Observe usual fumigation precautions.)

(5) CYANOGAS G-FUMIGANT . . .**

A dustless sea-sand size granulation of Calcium Cyanide liberating hydrocyanic acid gas. The same positive fumigant but of lower strength than AERO BRAND HCN DISCOIDS. Unsurpassed for easy, economical fumigation of small storage buildings needing only low dosages of gas. (Not to be used in dwellings.)

We shall be glad to send you full information concerning any or all of these insecticides and rodenticides.

AMERICAN CYANAMID COMPANY

Agricultural Chemicals Division

Insecticide Department

32-F ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK

Branch Offices: 628 Dwight Building, Kansas City 6, Mo.
2203 First Avenue, South, Seattle 4, Wash. • Azusa, Calif.

**Reg. U. S. Pat. Off. *Trade Mark

til termination of study on a particular ship. It has been noted that poisoned rats frequently die within a few feet of the 1080 dispensers and are easily recovered by inspectors. However, in many instances the poisoned rats have sought harborages from which it has been difficult or impossible for inspectors to recover them. Poisoned rats are destroyed or buried following their identification and study. At the conclusion of the program on a vessel, dispensers and materials containing 1080 are removed. These are labeled and stored for future use. or are destroyed.

Some Results Obtained with 1080 on Ships

The initial application of 1080 on a surface vessel during the present study was made in April 1946. During an interval of nearly 1 year 96 vessels have been individually treated with 1080 and observed for results.

A questionnaire furnished the quarantine stations at the beginning of the program has made it possible to obtain reasonably complete and uniformly reported data for each vessel. These reports, one for each vessel treated with 1080, are submitted to headquarters.

A summary of some of the data obtained is given in table 1. Although only four stations have submitted reports to date, 21 others have been advised of the nature of the program and its possible implications. Several of these stations have arranged to participate.

Among other things, it may be noted that a relatively small amount of 1080 solution was used for each vessel. When expressed in terms of 1080 concentrate, the average amount per vessel is approximately three-tenths ounce.

TABLE 1.—*Summary, 1080 studies at Boston, New Orleans, New York, and Seattle*

Port	Number of ships	Dispensers		Solution 1080 (ounces)	Number of rats	
		Cups	Fountains		Estimated	Killed
Boston	16	1,297	57	1,119	231	156
New Orleans	41	2,806	0	1,610	510	673
New York	16	1,839	44	2,202	354	157
Seattle	23	1,951	31	2,585	380	276
Total	96	7,893	132	7,516	1,475	1,262
Average per ship		82.2	1.37	78.29	15.36	13.14

The critical phase of the study, obviously, is the rat mortality resulting directly from the 1080-poisoning program. As may be observed in table 1, 1,262 of the 1,475 rats estimated were found dead following 1080 application. As previously mentioned, a number of rats poisoned during the program could not be recovered from their harborages. Records for these and for many poisoned mice were not incorporated in this report. Three species of rats were recovered from the ships treated: the black rat, **Rattus rattus rattus** (Linnacus); the Alexander, gray, or roof rat, **Rattus rattus alexandrinus** (Geoffroy); and the Norway, brown, or sewer rat, **Rattus norvegicus** (Berkenhout).

Results obtained through the use of 1080 were compared with some results of hydrocyanic acid gas fumigations. Eight quarantine stations submitted information as requested, for 159 ships fumigated with HCN gas. These reports, most of which were made during 1945 and 1946, were taken at random from the files. A comparison of data from four of these stations, which also participated in the 1080 studies, is made in table 2. The per cent of estimated rats killed on 96 ships with 1080 was 85.5, compared with 99.2 percent on 83 vessels fumigated at the same stations.

TABLE 2.—*Comparison of some HCN and 1080 data for Boston, New Orleans, New York, and Seattle*

Deratization method	Number of ships	Number of rats				Percent of estimate killed
		Estimated		Killed		
		Total	Average	Total	Average	
HCN fumigation	83	1,210	14.58	1,200	14.46	99.2
1080 poisoning	96	1,475	15.36	1,262	13.14	85.5

The percent of estimated rats killed by HCN fumigation at all eight stations was 114.7, which is an increase over that for the stations shown in table 2. If the number of rats estimated could be considered the total population, then 1080 would appear 85.5 percent efficient, as applied in the present study. When compared with results obtained through the 159 HCN fumigations previously mentioned, 1080 results exhibit an efficiency of 74.5 percent. Although the compound 1080 has thus far given favorable results, it is fully realized that conclusive data pertaining to its efficacy in the quarantine deratization program have not been obtained. However, the program is being continued and should provide additional pertinent information.

Suitability of 1080 for Shipboard Use.

One of the more desirable features of 1080 when used in rat control on ships is the facility with which it may be employed in combination with water or with baits. It is an effective rat-killing agent, is seemingly readily accepted, and is quick-acting following its ingestion by rats. There is a good possibility of easily recovering most of the dead rats, since many rats die within a few feet of the poison stations subsequent to acquiring a lethal dose. Ship crews may remain aboard, and in some cases vessels may be worked after the poison is distributed, depending on the nature of the cargo, location of poison stations, and other factors which vary with the vessel. In addition to lending itself to application to enclosed areas, 1080 may be satisfactorily applied to open deck spaces, in lifeboats, and elsewhere. The reduced number of personnel needed to conduct a deratization program and the simplicity of equipment required are points to be considered. Among other favorable features of 1080 (1) is the apparent insignificant degree of tolerance developed to this poison by rats which may ingest sublethal quantities.

One of the less desirable qualities is that in many instances on ships thus far treated only a partial kill of rats was obtained during the first day. This apparent deficiency may be largely due to methods employed, rather than to the poison itself. Also, an aqueous solution of 1080 freezes when exposed to low temperatures, which necessitates modification of the formula if it is to be used under such conditions.

Additional Information on Toxicity of 1080

The chemical compound 1080 is highly poisonous to rats, and effective

IT'S *New!* IT'S *Better!*

EESSCO
TRADE MARK

Saf-T-Cup

Twice Actual Size

Specially Designed Suction Bottom and Low Lip make EESSCO Saf-T-Cup almost TIP-PROOF!

Welcomed by Insurance Underwriters

© 1947 Pat Pending

Special Sample Offer!

250 Saf-T-Cups

SENT POSTPAID FOR $1.00

STANDARD PRICE LIST

5M	$3.16	Per M
10M to 20M	2.84	" "
25M to 100M	2.53	" "
250M	2.37	" "

Packed 5M to Carton — Shipped anywhere in U. S Postpaid when check (or M.O.) accompanies order

EESSCO
TRADE MARK

CHECK THESE VITAL POINTS!

- ✓ Leak proof — will hold its supply of liquid poison until completely evaporated.
- ✓ Special red fade-proof ink — imprinting imparts no odor or taste. Thoroughly acceptable to rats and mice.
- ✓ Cannot be mistaken for food dispensing cups — each cup has words "Fatal Poison" encircling the skull and cross bones making clear visible warning.
- ✓ Can be used for 1080, arsenic water, ant syrup and most other common poisons.
- ✓ Readily accessible to ants — low lip enables ants to crawl over top — no need to punch holes in sides.
- ✓ One ounce cup — holds ¾ ounce easily without filling to brim.

If you have any special equipment or operating problems, write us about them. We will be glad to help you. Correspondence will be kept confidential.

EXTERMINATOR'S EQUIPMENT & SAFETY SUPPLY CO.

652 W. Walnut St. *Chicago 6, Ill.*

DEDICATED TO EVERY PCO's NEEDS

when used in accordance with recommendations. The Norway rat, **Rattus norvegicus**, requires only 4 mg. of this poison concentrate per kilogram of body weight to kill 50 percent of the rats so treated. Even this seemingly minute quanity is greater than that required for other species of wild rats tested. This may be seen in table 3, which was compiled from data incorporated in a National Research Council report (2) giving the approximate amounts required to kill 50 per cent (LD-50) and 90 percent (LD-90), respectively. The Norway rat, although apparently more resistant to 1080, is far more susceptible to ANTU than other species of wild rats tested.

Ten-eighty is also very poisonous to other animals and presumably to man. Its toxicity to a number of birds and mammals, including certain species of rats, is shown in table 4, which was taken from a National Research Council report (1) and modified with respect to requirements of the LD-50 percent for wild rats, revised data (2) being used.

In addition to the fact that 1080 is extremely toxic when taken directly into the body, there are reported deaths to dogs, cats, and other animals (2) due to secondary 1080 poisoning resulting from consumption of dead or dying rats. Dogs and cats are very susceptible to 1080 poisoning as may be seen from table 4; the amount of 1080 required per kilogram of body weight to kill 50 percent of the dogs and cats is considerably less than that for rats, It is apparent, therefore that 1080-poisoned rats offer a definate hazard to these animals.

The calculated comparative toxicities to man of seven rodenticides, including 1080, are shown in table 5, which was taken from a National Research Council report (2) and slightly modified.

The high absorption rate of this compound by the gastrointestinal tract make treatment for 1080 poisoning difficult. It is highly soluble in water and may be washed out of baits or formulations in the presence of rainfall or other water source and might possibly cause contamination of food or other supplies.

Ten-eighty concentrate is a white powder which could be mistaken for flour, baking powder, or similar food products if not properly labeled and kept under safeguards. The powder form of 1080 is said to be slightly hygroscopic (2), and in the presence of excessive moisture this could make accurate weighing and measuring or application of the concentrate to bait difficult.

TABLE 3.—*Toxicity of 1080 to rats*

Species of rat	Milligrams of 1080 per kilogram of body weight required to kill—	
	50 percent	90 percent
Rattus norvegicus	4	6
Rattus rattus alexandrinus	1	2
Rattus rattus rattus	1	2
Rattus rattus frugivorus	1	2

TABLE 4.—*Toxicity of 1080 to various mammals and birds*

Species of animal	Amount of 1080 in milligrams per kilogram of body weight of animal	Percentage killed
Albino rat	5-7	50
Norway rat, wild (*Rattus norvegicus*)	4	50
Roof rat, wild (*R. rattus subsp.*)	1	50
Cat	0.3	50
Dog	0.1-0.2	50
Goat	0.7	50
Pig	0.3	50
Horse	1	50
Monkey (Rhesus)	5-7.5	50
House mouse	8-10	50
Chicken (Rhode Island Red hens)	6-7	50
Mourning dove (*Zenaidura macroura*)	10	33
English sparrow (*Passer domesticus*)	2.7	100

TABLE 5.—*Comparative toxicities to man of 7 rodenticides*

Poison compound	Poison concentration in bait	Estimated LD_{50} in milligrams of poison per kilogram body weight	LD_{50} for 70 kilogram man (milligrams)	Poison in bait—milligrams/ounce	Lethal dose in terms of bait used in the field (ounces)
Sodium fluoroacetate (1080)	1 : 454	5	350	62.4	5.6
	1 : 268 (water)	5	350	105.1	3.3
Thallium sulfate	1 : 65	20	1,400	436.5	3.2
Zinc phosphide	1 : 50	40	2,800	567.0	4.94
Barium carbonate	1 : 5	800	56,000	5,670	9.9
Arsenic	1 : 33	1.5-15	105-1,050	860	0.12-1.22
Strychnine	1 : 320	1	70	88.5	
Alphanaphthylthiourea (ANTU)	1 : 20	(1)			(2)

[1] Not determined.
[2] Thought to be high.

Suggested Procedure for Use in Case of 1080 Poisoning

There is no specific treatment known for 1080 poisoning. Instructions given by the National Research Council (1), most of which are incorporated in the ensuing paragraphs, should be followed in case of 1080 poisoning. **A physician should be called at once.**

This poison compound acts upon the heart and nervous system of birds and mammals. Death usually results from its effect on the heart.

Ten-eighty is absorbed readily by the gastrointestinal tract and must, therefore, be removed immediately if harmful effects are to be prevented. The patient should be made to vomit at once by sticking a finger in the throat or by other means. Give a dose of magnesium sulfate (Eqsom salt) or other cathartic as a purge.

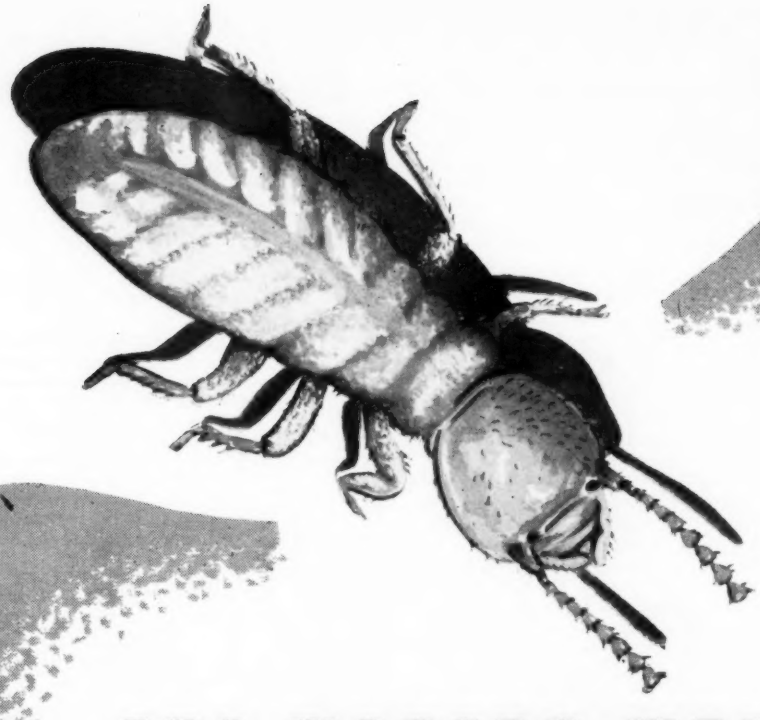
In the event of nervous system excitation the careful use of barbiturates of medium duration of action, such as sodium amytal, intravenously, if necessary, is suggested. Other than complete rest and adequate sedation, little can be done to prevent progression of cardiac symptoms. Should ventricular fibrillation occur, intracardiac injection of 5 cc. of 1-percent solution or procaine hydrochloride might be attempted to restore an organized heartbeat. Although symptons of 1080 intoxication will usually subside within 1 day, the patient should be kept quiet for a period of 3 days if there is any sign of action on the heart.

References

(1) Anonymous: Instructions for using compound 1080 (sodium fluoroacetate) as a rodent poison. National Research Council, Washington, D. C. Revised July, 1946 (mimeographed.)

(2) Ormsbee, R. A.: A summary of field reports on 1080 (sodium fluoroacetate). National Research Council, Washington, D. C. December 17, 1945 (mimeographed).

Public Health Report, Vol. 62: 6-27-47- #26.



THE MODERN WAY TO DESTROY TERMITES

The same modern chemical that lumber treating plants are endorsing so enthusiastically . . . "Penta" Preservative . . . is available to you for combatting termites.

Test after test has proved pentachlorphenol extremely toxic to termites and other wood destroying pests—at the same time it protects the wood from decay. Now pest control operators can obtain the same powerful chemical to treat termite-threatened buildings. You'll find it easy to apply to the wooden structure, for Chapman "Penta" Preservative can be either swabbed or sprayed. You'll also find it highly effective when you use it as a soil poison around the buildings.

Plus value of Chapman "Penta" Preservative to your customers is that it's odorless and almost colorless. The treated wood is left clean, and can be painted, stained or varnished.

You can get Chapman "Penta" Preservative in either a concentrate or ready to use form. For details on this valuable addition to your exterminating service, write us immediately.

CHAPMAN

CHAPMAN CHEMICAL COMPANY

333 North Michigan Avenue, Suite 534, Chicago 1, Illinois

"PENTA" PRESERVATIVE CONTAINS PENTACHLORPHENOL, PRODUCT OF THE DOW CHEMICAL COMPANY

The Poets' Hymenoptera: Part II - The Honeybee*

By C. R. TWINN, Ottawa, Ontario, Canada

A REMARKABLE fact about the honeybee is the apparent organization of the workers to ensure a proper division of labour, and to prevent overlapping or duplication of activities. There also seems to be an allocation of the available territory among the workers. Furthermore, they usually collect nectar from only one species of plant during any one trip. This is of primary importance in the fertilization of the flowers, the pollen being carried from blossom to blossom on the hairy bodies of the insects. In the following, from **The Church Providence, George Herbert wrote that:**

"Bees work for man, and yet they never bruise
Their Master's flower, but leave it having done,
As fair as ever and as fit to use;
So both the flower doth stay and honey run."

This is a nice thought, but not really quite accurate, for flowers that have been fertilized by the bee's visit soon die, their function of attracting the insect to ensure pollination having been completed. This is, in fact, a problem with which commercial flower growers have to contend.

In visiting the flowers more pollen adheres to the bee's hairy body than is required for fertilization purposes, and the surplus is brushed by the bee from its body and legs, and packed into the pollen basket formed by the long hairs on the hind legs. This is carried to the hive where that not required for immediate consumption is stored in comb cells, topped with a little honey and capped with wax. It was probably the pollen that John Gay meant by "golden treasures," in the following from Rural Sports (Canto I.1.82):

"The careful insect 'midst his works I view,
Now from the flowers exhaust the fragrant dew,
With golden treasures load his little thighs,
And steer his distant journey through the skies."

In these lines Gay repeats a common error by referring to the worker bee as a male, whereas it is a female with undeveloped sexual organs.

Honey is made from nectar taken into the bee's crop, from which it is regurgitated and stored in cells in the honey comb. This was not known to earlier writers some of whom mistook the pollen baskets for the "Honey-bags," and others for wax carriers. For instance, Milton, in *Il Penseroso* wrote:

"Hide me from day's garish eye,
While the bee with honey'd thigh,
That at her flowery work doth sing";

and Robert Herrick contributed this pretty piece in *The Present*:

"Fly to my Mistresse, pretty pilfering Bee,
And say, thou bring'st this Honey-bag from me:
When on her lip, thou hast thy sweet dew plac't;
Mark, if her tongue, but sloly, steal a taste.
If so, we live; if not, with mournefull humme,
Tole forth my death; next, to my buryall come."

Patrick Cary also aluded to the "bag" of the bee in the following lines from *Whilst I Beheld the Neck of the Dove*, which point out that we have much to be grateful for.

"I took the honey from the bee,
On th' bag these words were seen.
'More sweet than this
Perchance nought is,
Yet gall it might have been':"

Sometimes during the summer the bees load themselves so heavily with nectar and pollen that it is only with difficulty that they can fly back to the hive, especially when the collecting is done some distance away from the colony. Robert Burns perhaps had this in mind when he wrote in *Bonnie Jean*:

"O blaw ye westlin winds, blaw saft
Amang the leafy trees;
Wi balmy gale, frae hill and dale
Bring hame the laden bees;"

The death of the worker bee during the active season usually occurs while the little creature is unsuccessfully striving to return to the hive from its last collecting trip.

The remarkable manner in which the bees locate the flowers, and also find their way back to the hive from considerable distances without becoming lost, has long been a subject of interest and controversy. At one time it was thought that the flowers were selected by their perfume, a popular idea apparently shared by Christopher Marlowe, as indicated in these lines from *Hero and Leander*, which refer to Venus:

"Many would praise the sweet smell as she past,
When t'was the odour which her breath fore-cast;
And there, for honey, bees have sought in vain,
And, beat from thence, have lighted there again."

Two centuries later, Samuel Rogers expressed a similar belief, namely, that the bees find their way back to the hive by recalling the odours of the various flowers they had visited on their outward journey. Here is the verse:

"Hark! the bee winds her small but mellow horn,
Blithe to salute the sunny smile of morn.
O'er thymy downs she bends her busy course,
And many a stream allures her to its source.
'Tis noon, 'tis night. That eye so finely wrought,
Beyond the search of sense, the soar of thought,
Now vainly asks the scenes she left behind;
Its orb so full, its vision so confined!
Who guides the patient pilgrim to her cell?
Who bids her soul with conscious triumph swell?
With conscious truth retrace the mazy clue
Of varied scents that charm'd her as she flew?
Hail, MEMORY, hail! thy universal reign
Guards the least link of Being's glorious chain."

However, modern beekeepers understand that it is not the sense of smell, but of sight, which guides the bees home. The insects memorize the location and position of the hive and of various objects which they pass on the outward flight, and may become lost if the hive is moved only a short distance away during their absence.

Inside the beehive is the comb, composed in two vertical layers back to back. These of hexagonal cells made of wax and arranged cells are used for rearing the brood and storing pollen and honey. The cells are made by the young worker bees which were referred to by Edmund Spenser in *Shepherd's Calendar* (D.67):

"I was wont to seeke the honie bee,
Working her formall rowmes in wexen frames."

Shakespeare had in mind the enormous number of cells which comprise the comb in Prospero's reply to Caliban's imprecations, in *The Tempest* (I.2):

"Thou shalt be pinch'd
As thick as honeycombs, each pinch more stinging
Than bees that made them."

When it is realized that a colony of bees may contain from 10,000 to 80,000 individuals all reared from waxen cells it will be seen that this was no light threat.

The wax of which the comb is made is secreted by the worker bees and is not collected from flowers and brought to the hive on the "thighs" of the insects, as was believed by many people and mentioned in the following lines by Parnell, who also thought of the bees in the masculine gender:

"Thus in a thousand wax-erected forts
A loitering race the painful bee supports;
From sun to sun, from bank to bank he flies,
With honey loads his bag, with wax his thighs."

When wax is required, the young workers gorge themselves on honey and hang suspended from the roof of the hive, curtain-like, one clinging to the other. Presently the wax exudes from hypodermal glands between the segments on the underside of the abdomen and hardens in thin plates. The bee transfers these plates to the mandibles by transfixing them on certain spines on the hind legs, and they are then kneaded and used in constructing the comb. Apparently, in Elizbethan times, the wax was used for sealing legal documents and love letters, for Shakespeare alluded to its use for these purposes. In 2 *King Henry VI* (IV 2), Jake Cade, the rebel, replying to Dick the Butcher's suggestion that they first kill all the lawyers, says:

"Nay, that I mean to do. Is not this a lamentable thing, that of the skin of an innocent lamb should be made parchment? That parchment, being scribbled o'er, should undo a man? Some say the bee stings, but I say, 'tis the bee's wax; for I did put seal once to a thing, and I was never mine own man since."

This article is Part II of The Poets' Hymenoptera:—The Honeybee. Part I appeared in the July 1947 issue of Pests.

*Contribution No. 2448, Division of Entomology, Science Service, Department of Agriculture, Ottawa, Canada.

ONE YEAR OLD AND A "KNOCKOUT" CHAMP!

PYREXCEL 20 — IT'S SYNERGIZED —

A year ago we introduced our brand-new "baby" christened PYREXCEL . . . "PYRE" in recognition of his pyrethrum heritage . . . "EXCEL" for the faith we had in his ability.

The past year PYREXCEL 20 has built a record for high knockdown and kill of which we are proud.

The success of our lusty offshoot stems from a notable combination: time-tested pyrethrum extract and synergist, n-propyl-isome.

N-propyl-isome resulted from years of work during which time hundreds of synergists of vegetable origin were tested. Isome stood out on both excellence of performance and lower cost of manufacture. An added advantage: *it is in the same non-poisonous class as pyrethrum.*

WRITE FOR FULL INFORMATION ABOUT PYREXCEL THE BEST BET

THE WORLD'S LARGEST BOTANICAL DRUG HOUSE

S. B. PENICK & COMPANY

50 CHURCH STREET, NEW YORK 7, N. Y.
Telephone, COrtlandt 7-1970

S. B. PENICK & COMPANY • ASBURY • NEW YORK • CHICAGO • HIPPOCRATES

735 WEST DIVISION STREET, CHICAGO 10, ILL.
Telephone, MOHawk 5651

Also, in *Cymbeline* (III 2), when Imogen received a letter from her lord Leonatus, she broke the seal with these words:

"Good wax, thy leave. Blest be
You bees that make these locks of council!

Besides wax, the bees use a material known as propolis in their construction work. This is a resinous material collected from the buds and other parts of various trees, especially poplars, and is used for filling up crevices and reinforcing the comb. It is carried to the hive in the pollen baskets. According to Phillips (2, p. 117), "they (the workers) clean the hive, and in case they are unable to remove the debris, they may cover it with propolis. Lizards, small snakes and other intruders to the hive, which are too large for the workers to remove, are sometimes found as "mummies" on the hive bottom, sealed in propolis." Tennyson alluded to this practice in *Queen Mary* (III 3):

"But they say that bees,
If any creeping life invade their hive,
Too gross to be thrust out, will build him round
And bind him in from harming of their combs."

In early summer, as the bee colony increases in strength, royal cells are made, which are ovoid in form and considerably larger than the six-sided worker cells. In these the queen larvae are reared on "royal jelly," which may be glandular in origin and is secreted from the workers' mouths, instead of honey and bee-bread (pollen), which is the principal diet of the larvae of the drones and workers. The virgin queens are reared in small numbers to emerge at short intervals. When a young queen is ready to emerge, the old queen departs from the hive with a proportion of the workers to establish a colony elsewhere. Before leaving the hive the bees gorge themselves with honey, so that they will not be hungry for a few days, and in this well-fed condition are usually too torpid to be aggressive or to sting. This whole process is called swarming. Milton wrote in *Paradise Lost* (VII 489) that, at the creation, after the ant:

". . . swarming next appeared
The female bee, that feeds her husband drone
Deliciously, and builds her waxen cells
With honey stored;"

a description that fits the worker bee rather than the queen, except for the reference to the "husband drone."

Chaucer alluded several times to swarms of bees. In the *Sompnoure's Prologe*, for instance, the angel ordered Satan to show a visiting frere (friar) where he kept the freres in hell, as none were in sight:

" 'Hold up thy tayl, thou Sathanas', quod he,
'Wher is the nest of freres in this place'.
And er than half a forlong way of space,
Right so as bees swarmen out of an hyve,
Out of the develes ers thay gonne dryve,
Twenty thousand freres on a route,
And throughout helle swarmed al aboute."

Drumming on an empty box placed over a beehive may cause the bees to gorge with honey and swarm into the box. It used to be thought that bees swarming in the open could be induced to settle by beating tin cans and in other ways making a din, but there is no truth in this belief. Disturbance of bees by noise was referred to by Chaucer in the *Nun's Priest's Tale*, when the fox being pursued:

"The dokes (ducks) criden as men wold hem quelle;
The gees for fere flowen over the trees;
Out of the hyve came the swarm of bees;
So hidous was the noyse, a benedicite!"

Of course, the beekeeper has to take prompt action when any of his colonies swarm, as otherwise they may be lost, and doubtless there is much

". . . hurry and alarm
When the beehive casts its swarm;"

as suggested by Keats in the poem *Fancy*.

After the old queen has departed with her swarm of workers, the virgin queen goes off on a marriage flight, and returns to carry on her functions of repopulating the hive. Sometimes two or more swarms are given off from the colony during the season. This depletes the colony and causes loss to the honey crop, and sometimes loss of swarms. This problem of the beekeeper is stated in the following old English nursery rhyme:

"A swarm of bees in May
Is worth a load of hay;
A swarm of bees in June
Is worth a silver spoon;
A swarm of bees in July
Is not worth a fly."

When the new virgin queen emerges, and prior to her mating flight, she usually visits the royal cells and stings to death the other young queens. If, instead of doing this, she flies off with another swarm, the process of swarming may be repeated several times, with the result that the successive swarms are too small and weak to be of value, and the parent colony loses the ability to gather surplus honey.

The somnolent sound made by swarming bees was mentioned by several poets. In Chaucer's *Squire's Tale* are the descriptive words:

"They murmureden as dooth a swarm of bees;"

and in Spenser's *Faerie Queene* (I I) the sprite who went to the castle of Morpheus found the latter hard to wake:

"A trickling streame from high rock tumbling downe,
And ever-drizling raine upon the loft,
Mixt with a murmuring winde, much like the sowne
Of swarming bees, did cast him in a swowne."

Tennyson, too in *The Princess* (VII 222), wrote of the:

"Myriads of rivulets hurrying thro' the lawn,
The moan of doves in immemorial elms,
And murmuring of innumerable bees."

Whoever has reclined in relaxed contentment in flower-strewn meadow or woodland on a warm summer's day and drowsily listened to the bees gathering nectar and pollen will appreciate Wordsworth's beautiful lines from the *Vernal Ode* (IV):

"To lie and listen—til o'er-drowsed sense
Sinks, hardly conscious of the influence—
To the soft murmur of the vagrant bee.
—A slender sound! yet hoary time
Doth to the Soul exalt it with the chime
Of all his years; a company
Of ages coming, ages gone;
. . . that faint utterance, which tells
Of treasure sucked from buds and bells,
For the pure keeping of those waxen cells;"

John Keats, on the other hand, in his *Epistle to George Keats*, thought:

"That the still murmur of the honey bee
Would never teach a rural song to me;"

and Robert Browning, in *Up at a Villa—Down in the City*, expressed the reaction of some to the song of the bee in the words:

"And the bees keep their tiresome whine
round the resinous firs on the hill."

Nowadays, beekeepers remove the bees' surplus stores of mature honey without causing any injury to the bees. In times past, however, it was a common practice to kill the bees in order to obtain the honey. This was alluded to in Shakespeare's 2 *Henry IV* (IV 5); when the dying king found his crown missing from his pillo and learned that the Prince of Wales had taken it, he suspected a sinister motive, and exclaimed in grief:

"How quickly nature falls into revolt
When gold becomes her object! . . .
When, like the bee, culling from every flower
The virtuous sweets,
Our thighs pack'd with wax, our mouths with honey,
We bring it to the hive; and, like the bees,
Are murder'd for our pains."

There is a description of the wanton killing of the bees to get their honey in Thomas Hardy's *Under the Greenwood Tree*:

" 'Here I be, Enoch,' said a voice; and the procession advancing further, the lantern's rays illuminated the figure of Goeffrey awaiting their arrival beside a row of beehives in front of the path. Taking the spade from Enoch he proceeds to dig two holes in the earth before the hives . . . The preliminaries of execution were arranged, the matches (made of lath and brown paper dipped in brimstone) fixed, the stakes kindled, the two hives placed over the two holes, and the earth stopped round the edges . . . 'Those holes will be the grave of thousands!' said Fancy. 'I think 'tis rather a cruel thing to do.' "

Shakespeare also referred to the smoking out of the bees in 1 *Henry VI* (I 5), in the words used by Lord Talbot in describing the effect of Joan of Arc (La Pucelle) on the English soldiers:

"A witch, by fear, not force, like Hannibal,
Drives back our troops and conquers as she lists:
So bees with smoke and doves with noisome stench
Are from their hives and houses driven away."

Another allusion by Shakespeare to robbing the bees, is to be found in *Julius Caesar* (V. 1), in the reply which Cassius and Brutus made to Antony's accusation that: "In your bad strokes Brutus, you give good words: witness the hole you made in Caesar's heart, crying 'Long live! hail, Caesar!'

Cas. "Antony, the posture of your blows are yet unknown; but for your words, they rob the Hybla bees, and leave them honey-less."
Ant. "Not sting-less too."
Bru. "O! yes, and soundless too;
For you have stolen their buzzing, Antony,
And very wisely threat before you sting."

FLIES • MOSQUITOES • BEDBUGS • COCKROACHES • FLEAS

Get Results — use NEOCID DDT COMPOSITIONS

Geigy—*"Originators of DDT Insecticides"*—offers you two NEOCID* DDT Compositions that are highly effective in pest control.

NEOCID A 10—a finely-ground artificially-colored powder containing 10% Geigy DDT.

NEOCID D 30—a solution containing 30% Geigy DDT (by weight) for dilution with deodorized kerosene.

If your local dealer doesn't have these tried-and-proven Geigy formulations, just send us his name and address.

*Reg. U.S. Pat. Off.

Geigy

GEIGY COMPANY, INC.

89 BARCLAY STREET, NEW YORK 8, N. Y.

ORIGINATORS OF DDT INSECTICIDES

HERE'S how to check RAT ODORS

IT'S AMAZING!

get "CHEK"

SPRAY OR POUR

SPECIAL . . .
Ask About the
New PER-MO Antu
Rat Bits in Assorted Flavors

Here's a real rat-odor killer. "CHEK" . . . the newest name in deodorants for putrefactive odors is "CHEK" . . . powerful enough to check odors of decayed animal and vegetable matter. "CHEK" is also used

- **For mopping floors (particularly wooden or porous floors).**
- **Cold storage rooms. Garbage cans.**
- **Locker room floors (control of Athlete's foot).**
- **Shower stalls (control of Athlete's foot).**

Available in Quarts or Gallons . . . order today . . . send $1.00 for generous sample.

PER-MO also makes PER-MO MOTHPROOF LIQUID . . . Fast repeater! Odorless! Packed in Bulk or to your request . . . PER-MO FLAME PROOF LIQUID . . . Approved by Kansas City, Missouri, Fire Marshal. Does not harm fabrics, decorations, etc., that water will not harm. Spray or dip! PER-MO "ANTU" RAT PASTE . . . Prepared ready for use . . . PER-MO "RED SQUILL" RAT PASTE . . . Prepared ready for use. PER-MO RAT BITS . ..Sure death to rats—non-poisonous to humans, pets, domestic animals. PER-MO RAT and MICE LIQUID . . . Two-way sure death to rats and mice.

PER-MO

*Putrefactive Odors.

Write Today . . . Full Particulars First Letter

PER-MO PRODUCTS COMPANY

3602-04-B Woodland Kansas City 3, Mo.

The honey that is taken from the beehive is the nectar disgorged from the crop or honey stomach of the bees into the cells of the honeycomb where it is "ripened." In this process the water content is reduced from more than sixty per cent to about twenty per cent and the cane sugar (sucrose) content is inverted into glucose and laevulose. The wholesome food value and attractive flavour of honey are too well known to need emphasis. However, if one eats too much he may agree with Friar Laurence in Shakespeare's *Romeo and Juliet* (II 6) that:

". . . the sweetest honey
Is loathesome in his own deliciousness
And in the taste confounds the appetite."

In the *Faerie Queene* (IV), Spenser likened love to a mixture of gall and honey, in which the gall greatly predominates.

"Trne be it said whatever man it said
That love with gall and honey doth abound;
But if the one be with the other weighed,
For every dram of honey therein found
A pound of gall doth over it redound."

Wordsworth, in *The Prelude* (XI 443), repeats the story told by Theocritus, the pastoral poet of Syracuse, how "Divine Comates" imprisoned in a chest was fed with honey.

"I hear thee tell how bees with honey fed
Divine Comates, by his impious lord
Within a chest imprisoned; how they came
Laden from blooming grove or flowery field,
And fed him there, alive, month after month,
Because the goatherd, blessed man! had lips
Wet with the Muses' nectar."

To have done this the bees would have had to take the honey from the honeycomb, and not direct from the flowers which yield only dilute nectar.

After the sources of nectar have gone, and the surplus stores of honey have been removed by the beekeeper, the bees begin to prepare themselves for survival through the cold weather. They drive out the drones and cease to rear any more brood, and cluster together in the comb, where they are separated from each other only by the wax walls of the comb cells. By feeding on the stored food they are able to generate sufficient heat to maintain a satisfactory temperature regardless of external fluctuations, a feat in which the honeybee is unique among insects. Early the following season brood-rearing is recommenced, and on warm days the workers leave the hive to visit the earliest spring flowers. This naturally has been observed by the poets who associate the first appearance of the bees with the arrival of spring. Here is a portion of the Earl of Surrey's *Description of Spring, Wherein Everything Renews, Save Only the Lover;* which was written about four hundred years ago:

"The buck in brake his winter coat he flings;
The fishes flete with new repaired scale;
The adder all her slough away she slings;
The swift swallow pursueth the flies smale;
The busy bee her honey now she mings;
Winter is worn that was the flowers' bale."

Much later, in *Cap and Bells* (XXIX 8), Keats wrote that the coaches were as:
"Many as bees about a straw-capp'd hive,
When first for April honey into faint flowers they dive."

He also described in *Endymion* "a bee bustling down in the bluebells," and the bees humming "about globes of clover and sweet peas." Further, in *I Stood Tip-Toe Upon a Little Hill,* he pictured:

"A bush of May flowers with the bees about them;
Ah, sure no tasteful nook would be without them;"

Another attractive description of the bees in spring was embodied in the following verse in a poem by Maurice Baring, entitled *Diffugere Nives,* 1917. *To J.C.S.*

"Now the brown bees about the peach-trees bloom
Upon the walls;
And far away beyond the orchard's bloom
The cuckoo calls."

Like all other living creatures the honeybee is subject to the attacks of disease and predacious enemies. Among the latter are birds, rodents, predatory insects and spiders. An allusion to the depredations of spiders is to be found in Edmund Spenser's *Amoretti* (LXXI 2):

"Your selfe unto the Bee ye doe compare;
And me unto the Spyder, that doth lurke
In close awayt, to catch her unaware;"

Several diseases affect bees, of which "foulbrood" caused by bacteria attacks the larvae, and the "Isle of Wight disease" caused by mites destroys the adults. The latter is reported to have wiped out a lot of old English stock. The mites get into the tracheae of the bees and suffocate them. It is commonly spread by the worker bees pillaging stores from weak hives where the disease is present. An old English folk rhyme states that:

"If your bees fall sick, and pine, and die.
One of your house will soon in churchyard lie."

Fortunately there is no truth in this unpleasant superstitution.

According to the Oxford Dictionary, to have a bee in one's bonnet is to be mad on some point. Something of the sort is implied in these lines from Herrick's *Mad Nan's Song*:

"For pitty, Sir, find out that Bee
Which bore my love away
I'le seek him in your Bonnet brave,
I'le seek him in your eyes."

It is a far cry from the calm rustic scene usually brought to mind by the bee, to the noisy, thrumming, light-stabbed night sky, flecked by streaking German planes over an English city, but that Herbert Palmer thought of the bees on such an occasion is told in the following stanza from his *Air Raid*: 1917-1918:

"I never feel more cheerfulness
Than when the German raiders fly
Like bees across the cloudless sky.
And neither pity, pain nor terror
Will ever wean me from my error."

But it seems improbable that the poet would have had similar feelings amid the horrors of the 1940-41 German air-raids over England.

REFERENCES

1. Catlow, M. E., "Popular Scripture Zoology," London: Reeve & Co., 360 pages, 1852.

2. Phillips, E. F., "Beekeeping," New York: The MacMillan Co., 457 pages, 1918.

3. Twinn, C. R., "Ants in Fact and Poetry," Pests, Vol. 13, No. 10, pp. 18-20, October, 1945.

GI's Build Own Business Farmers Get Better Service in Idaho Spray System

Bulletin discusses direct control of ants, chiggers, ticks with chlorane, listing detailed formulae, etc.
JULIUS HYMAN & CO.; Dept. P., Denver, Colo.

Farmers and ex-service men alike are benefiting in Idaho, in a practical demonstration of Amercan initiative in spraying and dusting service.

The plan started from scratch in 1945 as the first GI's returned; today there are 30 companies operating 75 spray units and the field is steadily expanding.

And what does Idaho think of it? Here's the opinion of Dr. H. C. Manis, Idaho College of Agriculture entomologist:

"In this State we would much rather have the spraying and dusting work on insect control done by the individual farmer or by a custom spraying service than have such programs supported by State or Federal funds.

"In my estimation, such programs have very little value as the individual initiatiative is taken out when the work has to be supported by such funds."

The Idaho plan grew out of actual need. "One of our major problems in insect control," Dr. Manis reports, "was the lack of adequate and efficient spray equipment for use by the people throughout the State. In trying to put across an extension program on insect control we often ran into a blank wall because of this.

"In past years we had tried to encourage farmers to purchase their own spraying and dustng equipment but were never able to get too good a response. As a result, in many cases our extension program more or less bogged down.

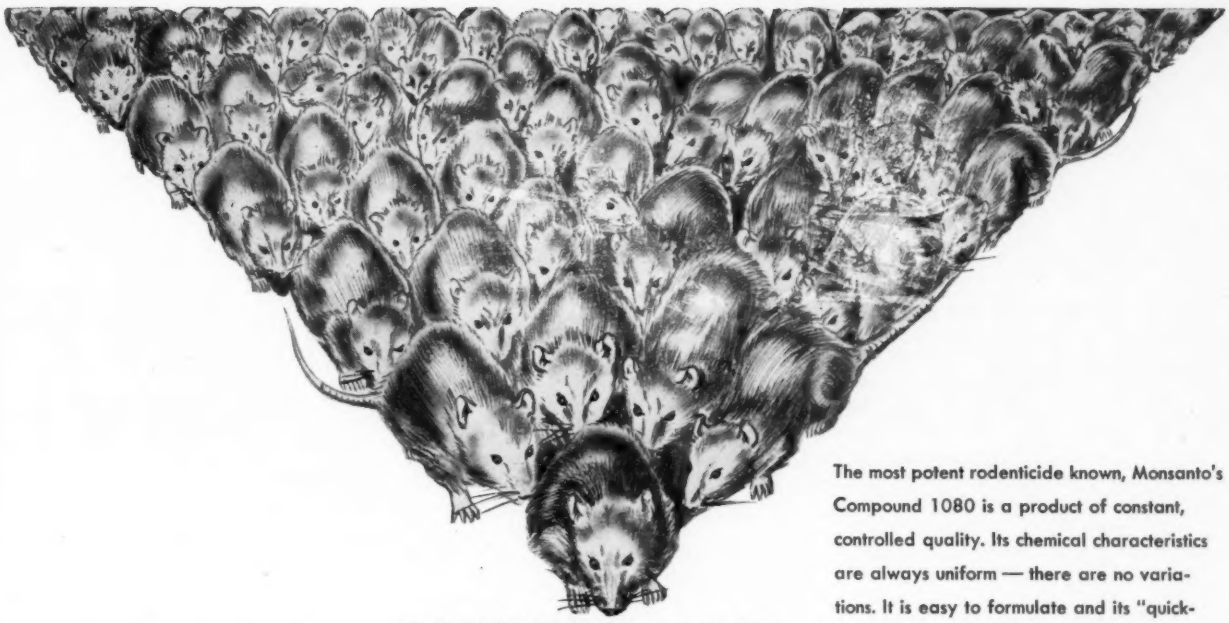
"In 1945 we commenced to encourage young men returning from service to enter the custom-spraying business. Quite a number were very much interested since it was a chance for a private business of their own.

"Those interested were encouraged and were trained as well as possible in the proper methods and techniques. They were invited to all demonstrations held, to see how the work was done. From this they were able to learn how to do the job from the very beginning. This method of training has proved very successful and the interest has now become very keen, with many new men entering this type of work."

Dr. Manis reported that most of the custom spray work in Idaho thus far has been for livestock parasites, houseflies, and earwigs, with some spraying of shade trees. Few of the GIs so far have entered spraying and dusting of field crops, as compared with States which have larger acreages of these.

The Idaho operators have formed an Idaho Pest Control Association, with Dr. W. E. Shull, former head of the Agricultural College entomology department, as president, Farris Lind of Boise, vice president, and E. O. Hart of Pocatello secretary-treasurer.

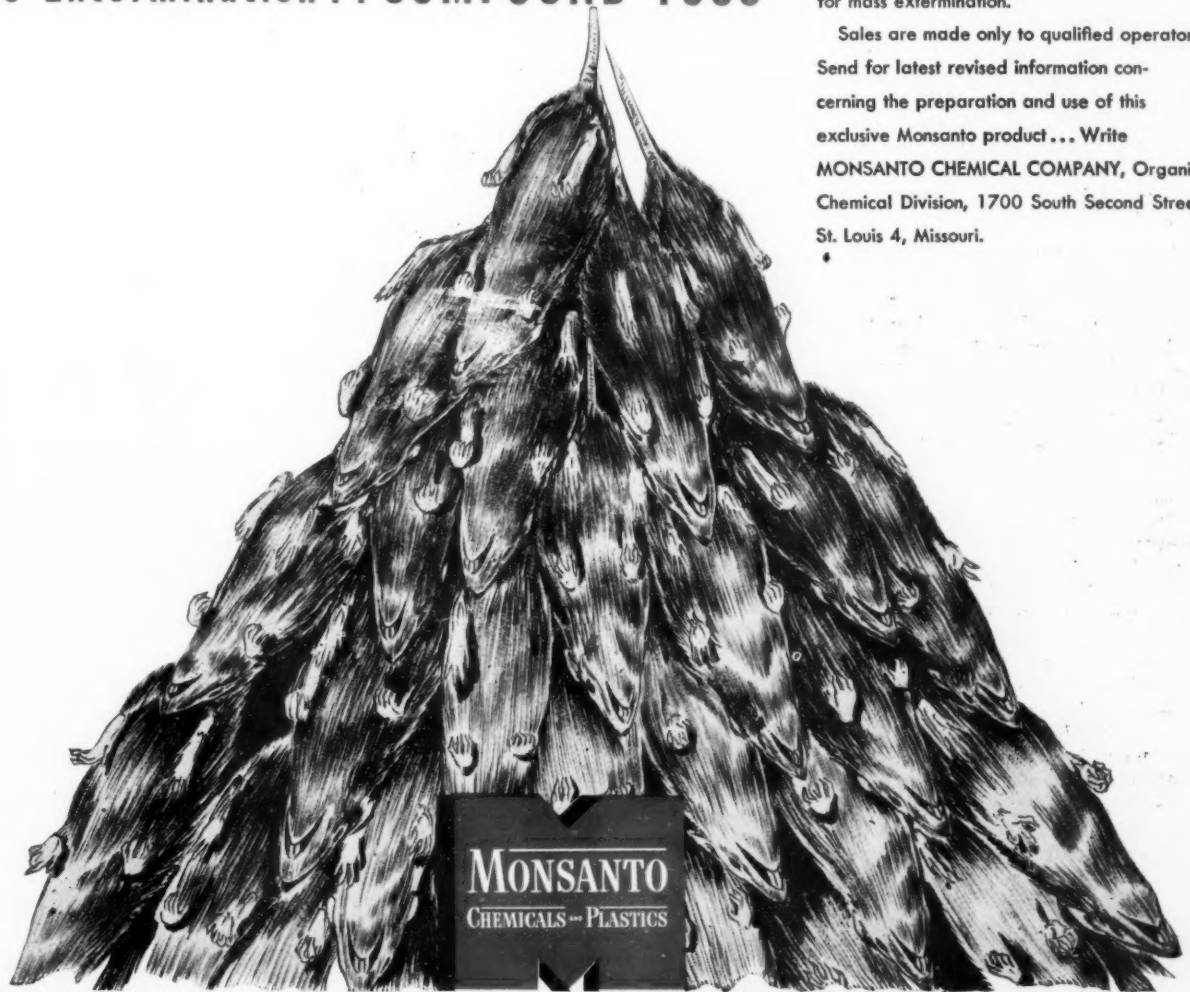
Membership in this is growing, and the Association is counted upon to watch closely the standards of operation. On this point Dr. Manis commented that "quite a number" of the newest operators "have not been as well trained as the earlier ones, but in most instances they are attempting to do a good job—since after all, satisfied customers are the basis for any business."
AIF News



Mass Extermination . . COMPOUND 1080

The most potent rodenticide known, Monsanto's Compound 1080 is a product of constant, controlled quality. Its chemical characteristics are always uniform — there are no variations. It is easy to formulate and its "quick-kill" properties make it particularly effective for mass extermination.

Sales are made only to qualified operators. Send for latest revised information concerning the preparation and use of this exclusive Monsanto product . . . Write MONSANTO CHEMICAL COMPANY, Organic Chemical Division, 1700 South Second Street, St. Louis 4, Missouri.



SERVING INDUSTRY . . . WHICH SERVES MANKIND

Utilization of Tannery Sludge As An Insecticide and Fungicide

By FRED H. WALKER, JR.,
Instructor, Public Health and Bacteriology New England Institute, Boston, Mass.

THE SLUDGE from the settling tanks in a tannery was considered as a source of lime sulphur because it contained both lime and sulphur. This material came from the liming and unhairing pits with sulphides being used in the unhairing process. The sludge was produced by treating the liquid previous to entering the sewer with carbon dioxide to precipitate the calcium as calcium carbonate. This precipitated calcium was then allowed to settle out in the settling tanks, thus removing it from the liquid before it entered the sewer.

Samples of the liquid were taken after it left the settling tanks, just previous to its entrance into the sewer. There was 0.07 of a gram of calcium and 0.02 of a gram of sulphur present in each 100 cc of this liquid. From these figures it appeared as if the poly-sulphides of calcium could be produced from the liquid in the sludge tank.

The literature was consulted to determine the proportions of calcium and sulphur that would be required to produce the polysulphides of lime sulphur. The amounts were 100 grams of sulphur to 50 grams of lime. These figures indicated that additional sulphur would have to be added to the sludge liquor to produce the polysulphides.

Six samples of the liquor were taken from the sludge tanks with the exception of one, were boiled with sulphur added in different amounts to determine the quantity of sulphur needed to produce the polysulphides. Standard solutions were made up for color tests. These solutions were then boiled for one hour to produce the characteristic reddish-brown color of the polysulphides. The sludge solutions were treated by adding different amounts of sulphur to 500 cc of the sludge liquor and then boiled for one hour. The comparison of these solutions to the standard solution as to color gave the following results:

0 grams of sulphur added to 500 cc of sludge liquor—No Color.
5 grams of sulphur added to 500 cc of sludge liquor—No color.
10 grams of sulphur added to 500 cc of sludge liquor—No color.
15 grams of sulphur added to 500 cc of sludge liquor—Very light color.
25 grams of sulphur added to 500 cc of sludge liquor—Fair color.
50 grams of sulphur added to 500 cc of sludge liquor—Good color.

The samples of sludge liquor to which 50 grams of sulphur was added showed an excess of sulphur which settled out in the solution in a short time. This lime sulphur solution contained water in an excess giving a specific gravity reading of 1.005. The standard lime sulphur solutions have a range of from 1.036 to 1.33.

The results obtained by boiling sulphur with the liquid from the sludge tank showed that by adding sulphur the polysulphides could be produced. The majority of the polysulphides produced were from calcium but some of them were from sodium which originated in the unhairing pits. The presence of sodium in a lime sulphur solution is detrimental because of its burning effect on plants and its action on arsenate of lead producing water soluble-arsenic. There is of course the possibility of using sludge liquor to make a Bordeaux or Burgundy mixture by adding copper sulphate.

There is considerable inert material left in lime sulphur made from sludge liquor which would have to be removed before it could be used as a spray. There is a possibility of using the liquid directly from the lime and sulphite pits before it enters the settling tanks and previous to treatment with carbon dioxide. This would eliminate the dilution of the liquor with water and result in a higher specific gravity reading.

The cost of material to produce 50 gallons of standard lime sulphur solution would be the cost of 50 pounds of lime at $.187 and 100 pounds of sulphur at $3.70, making a total of $3.887 for 50 gallons. In the sludge liquor all of the lime is present, but 90 pounds of sulphur must be added which would cost $3.33. The saving in material to produce 50 gallons of lime sulphur from sludge liquor would be about $.557 or about 15% of the total cost of material. The prices used were the costs of the material at the time the test were conducted, therefore, due to fluctuations may be used as a comparison only.

The cost of lime and sulphur is so low that little additional labor or equipment could be used as this would increase the cost of manufacture above that of the standard solutions. The cost of producing lime sulphur from treated sludge liquor would be greater than by the self boiled or commercial methods. There are two reasons for this increase in price, namely, the low specific gravity and the removal of foreign material. These costs could be reduced by using the liquor directly from the lime and sulphate pits and by reducing the volume of water used to flush the pits, also by using the liquor directly from the pits before the carbon dioxide treatment. This would also help to eliminate the foreign material.

LITERATURE

Hamilton, C. C., Entoma, A directory of insect control. New Brunswick N. J.
Eastern Branch American Association Economic Entomologists. 101 p., 1935. (Ref. p. 87, 93-94, 94 and 99)
Herrick, Glen W., Manual of injurious insects., N. Y. Holt. 489 p., 1927, (Ref. p. 53-58, and 76-77)
Metcalf, C. L. and W. P. Fling., Destructive and useful insects., 2nd ed. N. Y. McGraw, 981 p, 1939, (Ref. p. 267-270)
Robinson, R. H., The Beneficial action of lime in lime sulphur and lead arsenate combination sprays. Jour. Econ. Ent., 12:6; 429-433. Dec., 1919.
Seigler, E. H. and A. M. Daniels, Lime sulphur concentrates; preparation used and designs for plants. U. S. Dept. Agric., Farmer's Bul. 1285; 41 p. 1922.
Yothers, W. W. and J. R. Winston. Mixing emulsified mineral lubricating oils with deep well waters and lime sulphur solutions. U. S. Dept. Agric., Dept. Bul. 1217 5 p. Dec. 1924

Feeding Termites is Urged

Woodpile in Yard May Keep Them From House, Expert Says

Indianapolis, (AP)—Frank N. Wallace, state entomologist, suggests it's much better to feed your termites than to fight them.

Wallace says termites have no special appetite for floors, walls or walnut paneling. He said they prefer to be outdoors and that it would be best to have an old woodpile in your backyard to keep them from getting hungry for your house.

TERRA TOX for maximum effectiveness in the

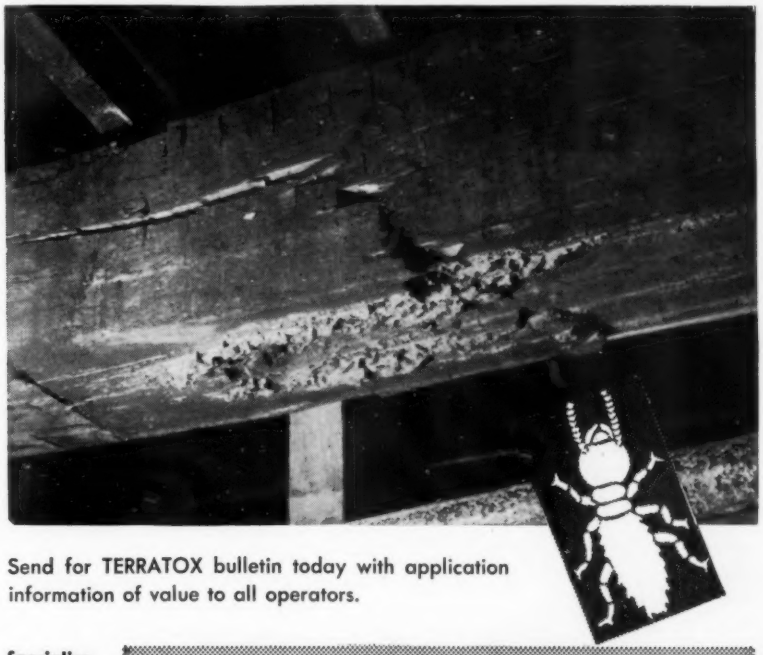
CONTROL

of Subterranean and Drywood

TERMITES

TERRATOX contains a base of 5% PENTACHLOROPHENOL, one of the most effective chemicals against termites (as proven by tests of U. S. Department of Agriculture). When applied as recommended, TERRATOX treatment can be expected to be effective for at least FIVE years. Highly concentrated to save shipping cost and storage space, TERRATOX is available in either water or oil solutions to best suit your requirements.

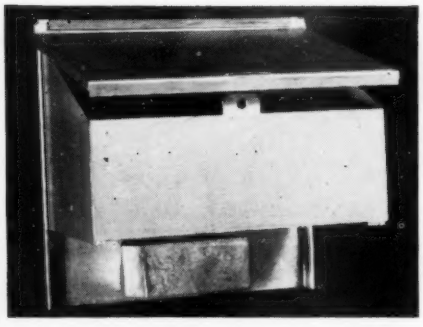
Regardless of the size of your termite control job you'll find TERRATOX in just the right size containers for your requirements—in 1 and 5 gallon cans—30 and 55 gallon drums.



Send for TERRATOX bulletin today with application information of value to all operators.

Specialize with TERRATOX on all your Termite Control Jobs

WOOD TREATING Chemicals Co.
5137 Southwest Ave.
St. Louis 10, Mo.



RODENT CONTROL STATION

6-12 stations $2.00 each
12 or more $1.75 each

MICE-GLUE
GETS MICE LIKE FLYPAPER GETS FLIES
10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

BIRD-REPELLENT
Keeps Pigeons, Starlings and Other Birds from Buildings
10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

PHOSPHORUS-PASTE
For Rats, Mice and the Large Brown and Black Roaches
10 lbs. $4.25 25 lbs. $9.00 100 lbs. $32.50

PEST CONTROL CHEMICALS CO.
324 Broadway Write for Details BUFFALO, N. Y.

Triple Atomization . . .

by *Mistmaster* gives fine diffusion and complete penetration of insecticides.

Mistmaster Triple Atomization means breaking the liquid insecticide into molecules by a powerful rotary compressor, warming it above room temperature for better diffusion, and complete atomization by tremendous nozzle pressure. This is an exclusive, patented *Mistmaster* principle and it gets insecticides exactly where they do the greatest good in full force and power.

Write Today for Free Literature giving complete information.

Sprayer CORPORATION of AMERICA
1700 PAYNE ST., EVANSTON, ILL.

The Extension Service and Pest Control Operations

By M. P. JONES, U. S. Dept. of Agriculture, Washington, D. C.

POSSIBLY no group has worked harder or accomplished more than have the pest control operators during the life of their National Association. To fully appreciate what has been accomplished, it is necessary to go back only a few years before this Association was organized. In this period many operators were poorly informed on what constituted adequate control measures. They were able to identify very few of the insects involved. The business relations with the public and even other members of their profession were adversely affected to a corresponding degree.

Fortunately there were enough reliable operators who had the foresight and courage to begin making plans to establish their profession on a higher plane. They realized the need for recognizing and knowing more about the insects and their habits in order to apply the most effective control measures. The desire for authentic information brought them to the entomologists and biologists in the Land Grant Colleges and elsewhere.

The extension entomologists were often the persons approached by the operators for help, and this brought about some of the earliest contacts with the extension Service. For the benefit of PCO's who are not familiar with the organization and function of the Extension Service a brief resume about this agency may be of interest.

About the turn of the century there came into being a new service for farmers. The people who served in this capacity were called farm advisers. This development led to the setting up of State Extension Services in many States. But it was 1914 before the Federal State Cooperative Extension Service was established. The early work of Extension dealt almost entirely with disseminating among farmers the findings of research relating to crops and livestock. There were county agents to serve the counties and subject matter specialists or field men to serve the county agents. The organization has grown with the increasing demand from farmers for more service. At the present time there are over 10,000 paid personnel in the Extension Service. Almost half of these are county agents or assistants and about one-third are home demonstrating agents. There is a Director of Extension in each State and altogether about 1500 subject matter specialists covering the various fields such as, Animal Husbandry, Crops, Home Economics and Entomology.

Although the early work of Extension was service to farm people, further developments in such fields as entomology and home economics have brought the extension workers into the towns. Consequently municipal corporation lines afford no boundary of extension activities. As public agents, extension workers are called upon for help from people in all walks of life. They give the best information available from science and experience. Such information is based on the results of research conducted by impartial public agencies, such as the Agricultural Research Administration, USDA and the many State Experiment Stations.

Increasing numbers of the public are looking to public agencies, such as the Extension Service, for guidance. This is especially true with respect to pest control partly because of the flood of new pest control materials coming on the market. The Extension Service has no products to sell. This is left to the private enterprise. It is only natural, however, that the public will be more nearly satisfied if there is agreement in the information they get from the public agency and the information, service and products they get from the pest control operators.

A common understanding can best be brought about by closer working relations. In many of the States, the State Pest Control Associations hold annual meetings in cooperation with the entomologists of the colleges and experiment stations. In most cases these take the form of refresher courses for members of the industry. This is a most commendable move and should be expanded and continued. There is every reason to expect that the number of pest control operators will expand as new fields of work open up. This will bring them closer to county agents. In many instances it will be mutually helpful if fthe Pest Control Operators will make it a point to become acquainted with the county agricultural agents, especially in the counties in which they operate. These agents are frequently called upon for information on the control of household pests. Often a person making the inquiry, upon finding out what the job entails may prefer to employ some one properly equipped rather than attempt to do the job himself. This further emphasizes the need for a better understanding of all parties concerned on the recommendations. There will be many cases where the county agent can learn from the PCO good reasons for applying control measures adaptable to a particular situation which may not agree in every detail with over-all recommendations. Such information might later prove useful to the county agent when he again encounters a similar situation. County agricultural extension agents will doubtless be requested for advice about difficult jobs for which they would be relieved to know there are dependable operators locally available equipped to do a satisfactory job.

The ultimate obective of the pest control operators and the Extension Service is similar in many respects. The success of each depends on the service rendered.

Fumigating Tents

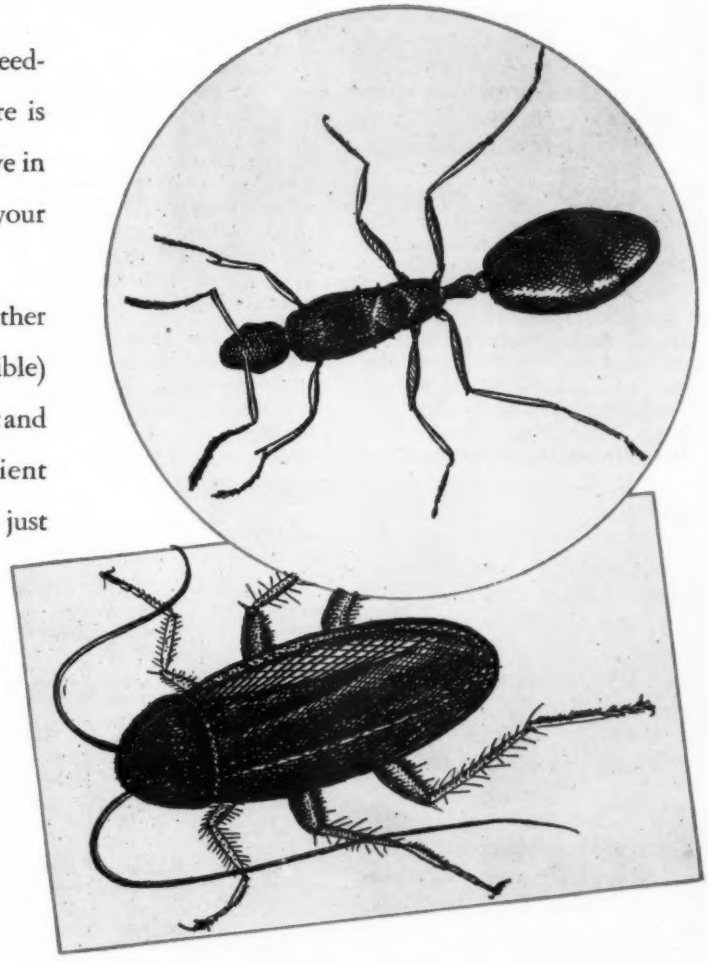
Fumigating Tents: Nylon is now playing a major role in one of the most important new developments in the citrus industry. Heretofore, fumigating of citrus trees has been done by covering them with bulky canvas tents. The Electrochemicals Department, manufacturers of "Hydro-Cy", widely used as a fumigant for this purpose, is now testing a new nylon tent. Many pounds lighter, it is much easier and less expensive to transport and set up. In addition, is strong and not easily torn, absorbs little moisture and is not damaged by mildew during storage.

Breed Flies For DDT Death

Te help scientists make a more accurate test of DDT killing powers, flies are being bred specially for laboratory experiments, says **American Agriculturist and Farmer.** Ordinary house flies and stable flies could be used just as well for such "death" tests, but the various breeds with their different constitutions and powers of resistance would lead to discrepancies in the findings.

There's MONEY in ants!

YES...*in ants*...and cockroaches as well



AS WINTER COMES, these nuisance-breeders move indoors in earnest. Here is your chance to help them make this move in *dead* earnest—increasing the range of your service at the same time.

Prentox Chlordane Concentrate, either O-S (oil-soluble) or W-M (water-miscible) as conditions indicate, makes an ideal ant and roach spray. Used at 2% active ingredient strength, it gives a positive kill—with just the right residual effect to permit you to offer *guaranteed results*, yet build steady repeat business.

Investigate the cost of Prentox Chlordane Concentrates now, while the season is young. Particularly in the Southern resort areas, this is a sure-fire business-building toxicant.

R. J. PRENTISS & CO., INC.

110 WILLIAM STREET, NEW YORK 7, N. Y. 9 SO. CLINTON STREET, CHICAGO 6, ILL.

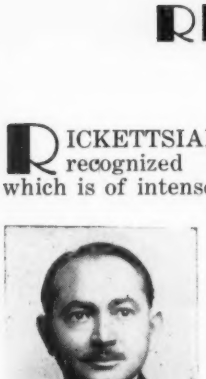
PRENTOX PEST-TESTED CONCENTRATES SOLD TO INSECTICIDE MANUFACTURERS ONLY

DDT CONCENTRATES • SABADILLA DUST CONCENTRATE • PYRETHRUM PRODUCTS • CHLORDANE CONCENTRATES • CUBÉ POWDER

RICKETTSIALPOX

A. A. FISHER, M. D.

RICKETTSIALPOX is a newly-recognized disease of man which is of intense interest to physicians and to readers of this periodical since one of your colleagues Mr Charles Pomerantz, of the Bell Exterminating Company, discovered the arthropod vector of this disease.



In June 1946 in Kew Gardens, Queens, a new disease appeared. The first thing that was noticed was a small, black ulcer usually on the exposed parts of the body. The gland nearest this ulcer became enlarged. About a week later the patients complained of headache, chills, fever and weakness. In a day or two a rash appeared which looked somewhat like chickenpox. The New York City Health Department and the National Institute of Health were called in by the local physicians to investigate this new disease.

Mr. Pomerantz and I had done some work with eruptions caused by mites which were parasites of mice and rats. After reading newspaper accounts of this disease, Mr. Pomerantz had a "hunch" that there might be an arthropod involved in this disease.

I introduced Mr. Pomerantz to Dr. Benjamin Shankman who was seeing a great many of these cases. Mr. Pomerantz was able to investigate the homes and cellars of the patients. He discovered a rodent mite later named **Alledermanyssus sanguineus** in the walls and on mice in the cellar. In these mites were found an organism which was named Rickettsia akari. These rickettsia are organisms between bacteria and viruses and are related to the causative organisms of Rocky Mountain spotted fever and typhus fever.

Several hundred cases of rickettsialpox were seen. Fortunately this is not a fatal disease. The blood of some of these patients grew the same rickettsial organisms as were found in the mites. This completed the cycle proving that the rickettsial organism is the cause of the disease.

It has been proved that Mus Musculus, the common house mouse, is the reservoir and this newly discovered mite is the vector of the disease.

There are no after-effects from this disease except a small, depressed scar at the site of the bite of the mite. Usually the patient does not feel the bite of the mite and unless one looks carefully one is apt to miss this important diagnostic sign. For at least a year after the patient has recovered there are specific changes in the blood which can be shown by complement fixation tests.

Here then is an example where cooperation between local physicians, the Department of Health, Federal health authorities and pest control personnel solved the riddle of a new disease.

Sturbridge House Full of Termites So Owner Burns It To Ground

STURBRIDGE, MASS. — More than 500 watched George R. Martel set fire last night to his house at Shephard and Wallace roads.

Martel poured kerosene on a pile of torn-up moulding and floor boards in a first-floor back room and put a match to it at 7 p. m. In 40 minutes the house which he had owned a little more than a month was reduced to a cellar full of embers.

The fire was set with the approval of Fire Chief John B. Cartier to rid the property of termites. It did.

Martel, a World War II veteran, bought the house last month from William R. Bouvier. He thought that at last he and his young wife had solved the housing shortage. However, close inspection of the property disclosed the greatest collection of termites local pest control experts had ever seen.

Foundation beams, window frames, and flooring boards were so honeycombed that the building was beyond repair except by burning, Martel said. Unable to move from his apartment in the old Gaumond store building to his new home, Martel decided at least he could have revenge and turned to Fire Chief Cartier for permission to burn the structure.

Advice Sought

Cartier sought the advice of Inspector Arnold W. Olsson of the State Department of Public Safety and the Sturbridge selectmen. In two weeks of searching and debating the officials failed to find any law, state or local, prohibiting a man from burning his house for such motives as Martel presented.

Chief Cartier issued a fire permit to Martel as owner and William Bouvier as mortgage holder. Fire pumps were stationed at the Quinebaug river and hose were run up the hill to the house where a spray was maintained to reduce the fire heat lest nearby buildings be ignited.

The house, for many years, was owned by the Ames Worsted Co. from whom William Bouvier purchased it. Small antique closets and doors, and wide old-fashioned flooring, however, easily put the house's age at 125. For 52 years the house was occupied by Mrs. Willard Morse who died in June. It long had been referred to as the Old Morse Place.

After the discovery of the pests Martel and Bouvier worked out a discount on Martel's original purchase price. Martel plans to retain the land and build a new home on what can be salved from the old foundation. He is a knife grinder at the Russel Harrington Cutlery Co., Southbridge.

Firemen Present

Members of the Sturbridge Fire Department, besides Chief Cartier, who kept the blaze under control were Deputy Chief Richard Sheldon, Deputy Chief Clifford Stedman, Fuller Jackson, George Gagne, Robert Provost, Bob Martin, Steve Sumalas, and Emil Fortier. They were assisted by a two-truck detachment from Southbridge headed by Fire Chief Oswald Meunier and Inspector Olsson.

A police squad consisting of David Johnson, Rupert Warrington, Omer Landreville and Patrick Brodeur rerouted traffic and maintained order.

A local wag tried to popularize a paraphrase on the old line about buying a pig in a bag to the tune of buying termites in a house. But the fire was too hot and the novelty was too great and the gag ended up, along with the roof of the house, in the cellar.

—Daily Telegram, Worcester, Mass.

Green house Insects Controlled With Aerosols

The use of liquified-gas aerosols provides a rapid and efficient method of controlling greenhouse insects, according to the U. S. Department of Agriculture. This conclusion was reached by the Department's Bureau of Entomology and Plant Quarantine after tests carried out in commercial greenhouses.

DDT aerosols were found effective against thrips, certain aphids, the young of mealybugs, roaches, the field cricket, sowbug, centipedes, the greenhouse leaf tier, the azalea leaf miner, the rose midge and the chrysanthemum midge. The new insecticide hexaethyl tetraphosphate, applied as an aerosol, acted as a fumigant, and was effective against the two-spotted spider mite, the greenhouse whitefly, two species of mealybugs and ten of aphids, but not against the broad mite or two species of snails.

The following are details on the tests on greenhouse insects:

The aerosols were usually applied at dusk by means of a knapsack dispenser, the operator wearing a mask to protect him from toxic materials. A solenoid valve dispenser

operated electrically by remote control proved suitable for small greenhouses.

A hundred grams (about 3¼ ounces) of DDT aerosol solution, containing 5 percent of DDT with Freon-12 as the propellent gas, proved sufficient for a thousand cubic feet. There was no injury to flowers or foliage. But cucumbers are injured if aerosols contain cyclohexanone. There was no ill-effect on honey bees and their activities in pollinating cucumbers, provided the aerosols were applied at dusk when the hive entrances were covered.

The hexaethyl tetraphosphate aerosol containing 10 per cent of the active ingredient in methyl chloride, was toxic when applied at a rate of 10 grams (about 1/3 of an ounce) per thousand cubic feet; doses as low as 3 grams per thousand were effective against aphids and whiteflies. There was no injury to some 130 plant species, though the tomato and chrysanthemum were adversely affected.

The use of aerosols enables growers to treat crops in considerably less time and with less labor than by spraying or dusting. It also reduces the danger of disease spread which follows the application of water sprays.

Animals Can't Read

Animals can't read cigarette advertisements, but pest control operators are sure that they will "walk a mile for" some of the new antipest chemicals. One operator stated he has seen cows actually seek out new spray installations, having caught on fast to what they are good for. So it says in Chem. & Eng. News.

DDT Insecticide Useful the Year Round

To many individuals the end of the summer heralds the close of the season for applying insecticides. However, this is not neccesarily correct, for many pests cause damage during the winter months. Some of the losses are due to insects that are characteristically active during the winter, while others merely persist indoors because temperatures are appropriate for insect activity. A few of the major fields in which there should be continued dealer activity and consumer interest may be listed as follows:

A. **Household Pests**—Mosquitoes are still around and will persist during the early fall, so continued application should be made of space type and residual sprays. Also, this is open season for control of roaches, bedbugs, clothes moths, and carpet beetles. This latter group may be controlled by application of either a 5% residual-type DDT spray or a 10% dust. In the case of roaches, for instance, a program employing both means of control will probably give most satisfactory results.

B. **Pests of Stored Grains**—A few days prior to harvest the granaries and other storage quarters should be treated with a 5% DDT spray. This will take care of many pests that cause millions of dollars of loss in stored grains. In the home, pantries and other storage quarters may also be very profitably treated.

C. **Storage of Bulbs**—Within the next few weeks gladiolus bulbs will be lifted and permitted to dry. At the time of removing the tops and roots, the bulbs should be lightly dusted with 3-5% DDT powder. Bulbs placed in storage either in trays or bags bearing such a dust will remain free from thrips damage. This is a simplified means of control for no further attention is needed during the winter season.

D. **Livestock**—Cattle lice are serious during the winter season because, particularly in Northern states, spraying of animals is inadvisable due to low temperature. As a result many dairymen have done nothing about various types of lice which over winter on the cattle. A 10% DDT powder worked lightly into the hair two or three times at two-weeks intervals will give excellent results.

Stipulation As To the Facts and Agreement to Cease and Desist

Goulard & Olena, Inc., a New York corporation, with its principal place of business located in Skillman, N. J., vendor-advertiser, engaged in the offering for sale and selling an insecticide spray designated "Go-Nex," in commerce, entered into an agreement, in connection with the offering for sale, sale and distribution thereof, to cease and desist from representing, directly or by implication:

(a) That the product is noncombustible.

(b) That the product will knock down insects instantaneously or kill them within sixty seconds.

(c) That the product is the safest insecticide.

Tried and True . . .

FIELD *Tested!* LABORATORY

STRYCHNINE OR THALLIUM IMPREGNATED

MICE SEED

MADE FROM ***IMPORTED CANARY SEED***

SHAFF LABORATORIES INC.

Mfg. Chemists

177 Pacific Street

Brooklyn 2, N. Y.

FOR SCIENTIFIC PERFECTION and PROVEN PERFORMANCE
MM&R ESSENTIAL OILS
Controlled by M M & R laboratories for highest quality. A long list of M M & R Essential Oil Replacements simulate the natural oils with remarkable fidelity.
MM&R PERFUME OILS
A complete range for every purpose and in various price ranges. Compound perfumes prepared to meet individual requirements.
MM&R NEUTRALIZERS
Tremendous covering power lasting effectiveness and exceptional economy
Write for Further Information and Complete Catalog
MAGNUS, MABEE & REYNARD, INC.
SINCE 1892 ... ONE OF THE WORLD'S GREATEST SUPPLIERS OF ESSENTIAL OILS
16 DESBROSSES STREET, NEW YORK 13, N.Y. • 221 NORTH LASALLE STREET, CHICAGO 1, ILL.
Los Angeles: Braun Corp. • Seattle, Portland, Spokane: Van Waters and Rogers, Inc.
San Francisco: Braun-Knecht-Heimann Co. • Canada: Richardson Agencies, Ltd., Toronto

Income Tax Saving Facts

By HAROLD J. ASHE, Tax Counselor

WHILE TAXPAYERS continue to groan under a heavy burden of taxes with no relief in sight again this year of 1947, at least some tax payers may help themselves while awaiting action by Congress. Relief, in many instances may be had by the simple device of taking more time and care in the collection of all information necessary for the preparation of the individual income tax return. I would not emphasize this save only for the fact that I have witnessed too many taxpayers take infinite pains to earn $100 or so who then turn right around and approach the problem of making an income tax return involving hundreds or thousands of dollars in taxes with casual indifference—at least until they see what the tax totals.

It is the writer's firm conviction that if the average small business would hang out a sign "closed to compute income tax" for a week he would make more money through tax savings than if he continued to do business during that period. No such drastic measure is necessary, however, provided he assigns adequate time to this major business task. Many a taxpayer too poor to give $100 to worthy charities nevertheless ponies up $200 or $300 or even more in overpayment of taxes because he "can't find time" to do a thorough job of making a tax return which truly reflects his financial circumstances and earnings. Yet, such oversights on the taxpayer's part may represent as much net income as he may make by hard work and careful management in a month's time.

With 1947 income taking $19 of every $100 of taxable income, even in the lowest tax bracket, it simply means that of every $100 in overlooked business expense, or personal deductions, to which the taxpayer is rightfully entitled by law, he is penalized at least $19 in additional taxes. Even a $19 tax saving should warrant more than haphazard application in making an income tax return.

Moreover, and this escapes attention of most taxpayers, overlooked business expenses and personal deductions take the tax applicable to the highest bracket any of the taxable income is in. That is, if the taxpayer has an income of $6,500 subject to tax, and he has neglected to report $500 of expenses, which fact makes his taxable income $6,500 instead of $6,000, that additional income carries a tax rate of $28.50 on the $100. The oversight costs him $142.50. (See accompanying table for tax rates.)

What Every $100 of Unreported Business Expense Costs the Taxpayer in Additional Income Taxes, Based on 1947 Rates.

If Taxpayer's Income Subject to Tax is:	Additional Income Tax Per $100 Unreported Business Expense
Up to $2,000	$19.00
Over $2,000, but not over $4,000	20.90
Over $4,000, but not over $6,000	24.70
Over $6,000, but not over $8,000	28.50
Over $8,000, but not over $10,000	32.30
Over $10,000, but not over $12,000	36.10
Over $12,000, but not over $14,000	40.85
Over $14,000, but not over $16,000	44.65
Over $16,000, but not over $18,000	47.50
Over $18,000, but not over $20,000	50.35
Over $20,000, but not over $22,000	53.20
Over $22,000, but not over $26,000	56.05

And increasing at the rate of $2.85 for each additional higher tax bracket.

Assuming that most businessmen are now sufficiently versed in the purely mechanical problem of making income tax returns, it is not the purpose of this article to review that aspect of the subject. Rather it is the intention to discuss certain finer points as they apply to small businessmen, and indicate certain tax-saving methods which, if employed, may materially reduce the income tax paid on a given income, just as such tax-saving methods have been employed for years by taxpayers in upper tax brackets.

Partly because of labor and material shortages, most business men throughout the war deferred making needed repairs and improvements to their business properties. In normal times such expenditures would have been made as a matter of course, and the cost would have been reflected in income tax returns. Failure to make such needed improvements and repairs, as required, has cost taxpayers dearly in increased income taxes, odd as this may seem.

ILLUSTRATION: A taxpayer's business property is badly in need of painting It should have been painted in 1946; it is still unpainted in 1947. His income subject to tax is $2,500 in 1947, after all exemptions and personal deductions. His tax is $484.50. If he had painted his property in 1947 at a cost of $250, his income subject to tax would have been reduced by that amount, and his tax would have been $432.25, or a tax saving of $52.25. Stated another way, the net cost of the paint job would have been only $197.75. In addition, no doubt, he sustained additional losses by reason of accelerated depreciation of his property due to neglect, as well as loss of trade because his establishment is becoming rundown and dingy.

ANOTHER ILLUSTRATION: Other improvements, such as additions to buildings, new store fronts, etc., unlike painting may not be written off in the year made, but must be charged off through their normal life as depreciation. Here, too, tax savings on a more modest annual scale may be made, but aggregating large total savings over the life of the improvements. If such improvements are justified, taxwise it is folly to continue postponing them.

Already tax rates have been materially reduced, and small reductions may be expected starting in 1948, so that the tax-saving value of needed improvements and maintenance is greater now than it will be in years to come. Moreover, most taxpayers are probably in higher tax brackets now than they are likely to be four or five years hence.

Reverting to painting to illustrate. This job, which affects a tax saving of $52.25 in 1947 (on taxable income in the second tax bracket), would have resulted in a $62.50 tax saving if it had been done in 1945 before tax structures were scaled down. In future years, if tax rates drop further, even less will be saved in taxes by such a paint job. Moreover, even if tax rates are not changed, if the taxpayer has the work done now while he is in, say, the $8,000 bracket, such a $250 paint job will save $71.25. If he defers it until say, 1949, when he will be in the $4,000 tax bracket, he will save only $52.25 n taxes, even if tax rates are not scaled down.

New equipment and fixtures and delivery trucks with a shorter useful life than building improvements will result in relatively greater yearly tax savings. This aside from greater profits resulting from such installation of equipment.

As depreciation represents a very substantial part of the cost of doing business, and as many taxpayers fail to take any depreciation whatsoever, or forget depreciation on certain items, taxpayers should deliberately take time to prepare an inventory of every last item that is subject to depreciation, regardless of its character or relative value. Numerous small items will aggregate in value as much as a major item. Such inventory should show the date acquired, its value at time of acquisition, rate of deprecaton, amount of annual depreciation. In addition to providing that all rightful depreciation will be reflected in the income tax return, such an inventory will prove invaluable n the event of a fire involving an insurance adjustment. A duplcate copy of the inventory should be kept off the business premises, so that if a fire occurs a copy is available.

While individual income tax returns provide for a separation of business expenses and personal deductons, the latter may have as profound an effect in determining the tax finally computed, as the former. Both business expenses and personal deductions determine the owner's net take-home compensation from his business.

Thus, the question of whether to use the short form, which allows a standard credit for personal deductions or to use the long form and report the deductions should not be dismissed without careful thought. The wrong decision costs millions of taxpayers additional taxes every year. If in doubt, the taxpayer should figure his return both ways and compare results, using the form effecting the greatest tax saving.

Even if it appears that there wll be no difference in income tax by use of either form, the taxpayer may still save considerable by using the long form, provided he anticipates the situation before year-end. Circumstances frequently arise in which the taxpayer, owing personal bills which are of a tax deductble character if paid, may he presented with a choice of paving such bills before December 31, or of deferring payment until the new year. This, of course, calls for a snap accounting prior to year-end. but it may pay off handsomely in decreased income taxes.

What is here said of the long form versus the short form is equally applicable where the taxpayer, because his income is in excess of $5,000, must use the long form. In that case he has a choice of reporting his personal deductions. or of taking the standard deduction in lieu of reporting.

ILLUSTRATION: A taxpayer owes a medical bill of $500 which he plans to honor

EASY!

BECAUSE THE CUTTING EDGE is KENNAMETAL

Here's the easy way to flood areas under cement walls, pavements, porches, etc. Just drill as many holes as you need with a long-lived Kennadrill, instead of tearing up the entire area. The strong, extremely hard Kennametal cemented carbide cutting tip of the Kennadrill drills quickly and easily through cement and other masonry materials —saves you dollars and hours on every job. Can be used in any rotary electric drill. Available in following diameters: 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", and 1-1/2".

Distributors Wanted

KENNAMETAL *Inc.*, LATROBE, PA.

KENNADRILLS

DRILL MASONRY FASTER, CHEAPER, EASIER

If your jobber cannot supply you with Kennadrills send us his name, and request Folder K-1.

VELO

RODENTICIDE PASTES

IN ½ LB. COLLAPSIBLE TUBES

A complete bait, made of choice ingredients, carefully selected, after thorough and intensive tests. Skillfully blended with either

ANTU OR FORTIFIED RED SQUILL

Can be used alone or added to other baits. Extremely attractive to rodents. You can now have the convenience of a tube at no greater cost than your price in bulk. Each tube in individual carton, all lithographed to match. Also handy 2 oz. and 4 oz. sizes for resale.

PRIVATE BRANDS FOR QUANTITY USERS.

Manufactured by:

VELODENT PRODUCTS MANUFACTURING CO., INC.

429 West Broadway **New York 12, N. Y.**

2 High Quality SOLVENTS

. . . for Insecticide Sprays

Penn·Drake Super-Sol

This specially refined, practically odor-free hydrocarbon insecticide base is ideal for moth sprays, where rapid evaporation is desired. It excels for DDT residual sprays because of its fast drying quality.

Penn·Drake Insecti-Sol

To give insecticide sprays greater killing power, deeper penetration and longer floating, Penn-Drake Insecti-Sol is the ideal base. It is 100% volatile, permanently free from kerosene odor, will not stain or soil clothing, curtains, drapes, wall paper, rugs or furniture.

PENNSYLVANIA REFINING CO.

General Offices: BUTLER, PA.

Refineries: KARNS CITY and TITUSVILLE, PA.
Branches: CLEVELAND, OHIO and EDGEWATER, N. J.

MAKERS: White Oils (U.S.P. and Technical); Petrolatums (all grades and colors); INSECTI-SOL (deodorized insecticide base); Deodorized and other Naphthas; Petroleum Sulfonates; Waxes; Industrial and Motor Lubricants and Greases; Fuel Oils, and other petroleum products.

in 1948. He has already paid medical bills during the year to the amount of 5 percent of his income (the first 5 percent not being deductble) so that if the $500 bill is paid it will be fully deductible. Further checking shows that ,if this bill is not paid in 1947, his tax will be approximately the same either by the long or short form. However, by paying this $500 before year-end, personal deductions then exceed by $500 the standard 10 per cent allowed in the short form. Even in the lowest bracket. payment of this bill before year-end will effect a $95 income tax saving. The same rule applies to other items of personal deduction character which the taxpayer may elect to pay by year-end, instead of deferring.

Conversely, where payment of such items may not result in any savings, the taxpayer may elect to defer payment of the bills and use the short form with its standard allowance for personal deductions. If he anticipates heavy personal deductions in the following year such bills, if payment is postponed until that year, may result in considerable tax savings in that year

Thus while only two days separate possible payment dates (December 31 or January 2 of the following year), the determination of which year to honor such bills may effect considerable tax savings or tax losses, as the taxpayer elects.

Other deductions of a personal character frequently overlooked include loss from accident, storm, hurricane, fire, flood, etc., to personal property, usually forgotten by the time the income tax return is prepared. Here again it will pay the taxpayer to take time out from his other business duties and review the year's personal events with the idea of recapturing forgotten facts of a tax-saving nature. Was his wife's fur coat stolen last February? Did a storm rip off the garage roof? Did a flood ruin personal property stored in the cellar.

Such deductions, of course, may be taken only to the extent not covered by insurance. Losses sustained by theft of either cash or property are deductible, if not recovered by insurance. Also, such losses ennumerated above are frequently ignored in computing business schedules in the tax return, due to oversight.

Herewith is a check list of certain additional items frequently overlooked in business schedules:

Membership fees in business associations, including Chamber of Commerce:

Expenses, including travel, hotel and meals, attending trade conventions;

Subscriptions to business and trade magazines;

Cost of smocks or jackets or overalls (but not regular clothes used for work), if not adapted to ordinary wear; also laundering same.

Above all else, no hard and fast rules may be made that apply to all taxpayers in all circumstances. Presented certain alternatives and choices, what a given taxpayer should do is as individual as each individual's income tax return. It has been the purpose of this article to point out that taxpayers, by becoming income tax conscious as a year-around state of mind, will be able to meet certain situations and make certain decisions with tax-saving considerations in mind, and who may, therefore, without violating the tax code, make material tax savings for themselves not only this year but every year hereafter.

Is This A New Idea

ELMER KUNTZ, Lien Chemical Co., Chicago, Ill.

WHAT leads a rat to choose a spot for gnawing a hole? Is it the light showing through cracks, crevices, knot holes, loose boards, etc.? If so, how would this apply if both sides were equally dark or light, or the rat gnawed through from the light side into the dark side? Is there something else which guides it to choose the spot for gnawing? Maybe there is. Maybe, as Galen Oderkirk, District Agent U. S. Fish and Wildlife Service, Division of Predator and Rodent Control, stated to the writer, "Perhaps we make the mistake of thinking or reasoning as humans when we should try to think (?) like the rats (Oh, No!) we are trying to control." In other words, how can we learn what impels animals to do as they do?

The experience I am about to relate points to the interesting possibility that rats may be guided by AIR CURRENTS rather than by sight (or smell).

In an experiment at Purdue University during the occasion of the Eleventh Annual P.C.O. Conference in April, 1947, three rats of varying sizes placed in a specially constructed, collapsible wooden (plywood) cage with wire mesh covering only the top and ends, had ample opportunity to gnaw through a number of cracks and crevices which they did not do. The smaller of the three rats, however, did escape through a small hole that had been enlarged (by gnawing) at the end of the one cage with an opening cut in the plywood for a sliding metal door to introduce the rats. This sliding metal door did not fit tight, permitting air currents to pass through. The rat (or rats) had gnawed completely around the opening, finally concentrating on one corner and eventually gnawing a hole large enough for the smallest rat to escape. This happened over night and it is possible that the larger rats did not have sufficient time to gnaw the hole large enough for them to pass through Although there were many other cracks and crevices, they were located where runways and cages were joined together adjacent to the wire mesh and therefore allowed no air currents to pass through. None of these places showed any evidence whatever of gnawing. The cage that had been gnawed out of was altered by putting all wire mesh where the door opening had been and there was no further attempt to gnaw through by the two remaining rats. The entire cage we speak of was crisscrossed by two runways six feet in length, with one cage measuring three feet by one foot attached to the ends of the runways (four end cages in all), and the rats had ample opportunity to scurry through the runways and in and out of the cages. This "contraption" is now at the Experiment Annex Station at Purdue University in the hands of Milton Caroline, Assistant District Agent, U. S. Fish and Wildlife Service, Division of Predator and Rodent Control, who intends to make further experiments with it.

Should the theory hold that rats are guided by air currents to seek spots to gnaw through rather than by sight it will have a most important bearing on rat-proofing or rat stoppage. Maybe there's nothing to it. What is your experience or belief?

Research Seeks to Prevent Insect Damage to Farm Products Used in Building

Serious damage or infestation by insects to certain types of agricultural products has resulted in limiting or even discontinuing their use as building materials. Research aimed at finding ways of treating these products to make them immune to insect damage has been approved under the Research and Marketing Act of 1946, the U. S. Department of Agriculture announced today. The studies will be conducted in Georgia, Mississippi, and Maryland by the Bureau of Entomology and Plant Quarantine, in cooperation with the Department's Forest Products Laboratory, and Southern Regional Research Laboratory, the Housing and Home Finance Agency, and various industries.

Building materials manufactured from agricultural products differ in susceptibility to insect attack. An attempt will be made to determine the susceptibility of various materials and to determine what new materials can be developed from products which resist insect attack as a result of treatments developed for the purpose.

Animal products such as hair insulation, hair padding for furniture, hair felt, wool felt, feathers, and casein, are now subject to severe insect damage. Studies will be conducted to find ways of treating these products so that they can be used as building materials and not damaged or infested with insects. The principal insects involved include clothes moths, and several species of beetles.

Some insects cause such heavy damage to certain vegetable products useful as building materials that they cannot at present be used for construction purposes. Attention will be given to means of preventing insect damage to materials such as fiberboard, cotton insulation, cottonseed hulls and seed cotton, tow, other vegetable fibers, and wood products. Pests usually involved in the destruction of these materials include termites, ants, roaches, crickets, mites, silverfish, psocids, and certain beetles.

In approving these studies, E. A. Meyer, administrator of the new research act, pointed out that solution of these insect problems might mean entirely new outlets for agricultural products which are now excluded from consideration as building materials because of insect damage.

PROTECTION against moths and silverfish for one year may be had by using DDT-coated, ready-pasted cedar wallpaper, which comes in narrow strips that will fit into closets, dresser drawers, and chests.

SCARAT
FOR RATS

Its ODOR Terrifies!
Its TASTE Disgusts!
Its EATING "Kills"!

* * * * *

IMMUNIZE Bagging, Boxes, Cartons, Bins and other Vulnerable Containers against Rodents.

MIX SCARAT in Soya-Bean and Vegetable Plastics to protect them from hungry Marauders.

PAINT it on Wood and Wall Board to keep Vermin from Buildings.

Harmless to Human Beings, Pets and Domestic Animals.

USE SCARAT FREELY

Made under laboratory control and tested to conform to highest standards of strength and potency.

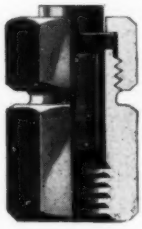
Results assured by careful check of quality.

A BOON to the PEST CONTROL Profession for STARVING out Rodents.

Invaluable for Warehouses, Food Storage Buildings, Institutions, Food Processing Plants and Cereal Factories. Also for use in Private Homes.

SPARHAWK CO.
SPARKILL :: NEW YORK
PEST CONTROL DEPARTMENT

Call or Write Us For All the Facts



- Equal density, flat spray pattern
- Free of streaks
- Uniform spray particles
- Spray nozzles ¼T-8001, ¼T-8002, ¼T-50015 and many other sizes available.

SPRAY NOZZLES for residual spraying

D. D. T.

DDT is effective in proportion to the thoroughness in which it is sprayed. Spraying Systems Flat Spray Nozzles provide perfect distribution. Already proved by use throughout the U.S.A. and world-wide war zones. Write for complete information.

SPRAYING SYSTEMS CO.
4093 West Lake Street Chicago 24, Illinois
SPECIALISTS IN SPRAY NOZZLE DESIGN AND MANUFACTURE

SOLVAY
TRADE MARK REG. U.S. PAT. OFF.
PARA-DICHLOROBENZENE

No. 1

No. 6

No. 9

When you package SOLVAY Para-Dichlorobenzene, either in crystals, or cake form, you are supplying your customers with the finest possible quality.

SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 Rector Street New York 6, N.Y.

RUTGERS-NJPCA

CLINIC

ON Wednesday, July 30th, 1947, the New Jersey Pest Control Association with the cooperation of Rutgers University, sponsored a clinic on the Lyctus beetles and other wood-destroying insects. This clinic was conducted by Dr. John B. Schmitt and since the success of any educational program conducted by Dr. Schmitt is a foregone conclusion, this item is going to be another success story.

Because of fortunate circumstances, the NJPCA was able to respond to its members' requests for specific information on the control of the Lyctus beetles: First—Dr. Bailey B. Pepper, head of the Department of Entomology of Rutgers University, is an exceptionally good friend of our industry and his offices made this mid-summer clinic possible. Secondly —Dr. John B. Schmitt's ever-ready willingness to be of constant assistance to our industry.

The Association is also fortunate that the Educational Committee was able to devote the necessary time to make its arrangements. It is the Association's policy to rotate the various officers and this year, John K. Medoff was named Chairman, and Fred J. Bowers, Co-Chairman. J. Edwin Sameth, who founded this committee four years ago and was its leader during those years, became a member of this committee. Because of the excellent organization and leadership under Mr. Sameth and because of the momentum set up by his committee, the necessary work for the short courses to be held in January was done, and therefore, his successors had the time to make the arrangements for this clinic.

The group met in the Entomology Building and from 9 to 12 received classroom instruction. Since most of the attendees received previous training in the toxonomy of the pests being studied, Dr. Schmitt went directly into their life habits and into detailed explanations in the structure of trees and its consequent results in lumber. The group was taught the composition of tree cells, its development and growth, and the difference between heartwood and sapwood. Since the starch content varies in different parts of the tree, it became apparent why only certain parts of lumber are destroyed or preferred by the Lyctus beetle.

The classroom studies were followed by a field trip and explanations were made which exemplified the activities of these pests. Walter Boyce who made the necessary arrangements for the group's inspection, was complimented on his selection. These buildings were like textbook pages for the PCO's purposes. After the inspections, the caravan of some dozen automobiles started the trek back to college. Because of the extreme heat, an afternoon recess was called, and by a lucky coincidence, the area selected because of its fine shade trees, also contained a dispensary of beer, pretzels and other goodies. The refreshed group then headed back to the college. By previous arrangement, projection slides were made and were used to discuss these buildings from the viewpoint of control. The methods of control, as outlined by Dr. Schmitt, were a revelation. Not only were they taught the logical steps for the control, but were also taught to diagnose the amount of work necessary, since in many instances only partial treatment was necessary.

The evening session had as its concluding section a roundtable discussion on "what didn't you learn" or "what didn't you get that you came here for" and any remaining questions were answered at this point. In the concluding ceremonies, Abe I. Charnack, president of the NJPCA, thanked the group for their participation, and announced that the short courses in "FUNDAMENTAL CHEMISTRY AS IT APPLIES TO THE PCO's" will be held in the period of Jan. 13th to 13st, 1948. This announcement was greeted with enthusiam and many of the boys are looking forward to attending that short course.

This being the first summer clinic, the committee had no idea how many could and would attend, and therefore, made arrangements for only thirty persons. The response was greater than was anticipated and many had to be turned away because of lack of space. As it was, with the use of stools and other uncomfortable seating arrangements, thirty-nine students actually attended this session.

DREW PEARSON (N. Y. Mirror) reports on our No. 1 enemy—the rat, that is. One rat eats or despoils 100 pounds of grain a year. There are an estimated 250,000,000 rats in the U. S. "If the food destroyed by rats could be shipped overseas, this alone might save Europe from its danger of starvation."

RODENTICIDE INSURANCE

Our Public Liability policies give you essential coverage against the risks of "1080." Certificates of Insurance issued to meet your requirements.

Other type policies, in all representative
AMERICAN STOCK COMPANIES, for:

Public Liability — Workmen's Compensation
Auto Liability — Products Liability
Property Damage — Accident & Health
All Allied Lines

As Well As
Life Insurance and all Forms of Employee Insurance Plans

Inquiries cordially invited. There is, of course, no obligation.

B. & D. A. WEISBURGER
Insurance since 1915
1440 Broadway — New York City 18, N. Y.

It Pays TO USE ELKAY

- **PARA Deodorizing Blocks**
- **PARA Deodorizing Crystals**
- **PARA Moth Products**
  Vaporizers — Crystals — Cakes
- **DDT. & Chlordane Concentrates**
  Specially compounded for household and agricultural insecticides
- **Refined NAPHTHALENE**
  Flakes and Balls—Packages and Barrels
- **SHUR-KATCH** Mice and Rat Pads
  Catches Rodents Like Flypaper Catches Flies
  NO POISON—NO BAIT

Write for Details and Prices NOW!

ELKAY PRODUCTS CO.
323-27 West 16th St. New York 11, N. Y.

Are You Using

R·T·VANDERBILT·CO·N·Y·U·S·A·
PYRAX ABB
AMERICAN PRODUCTS

the versatile carrier.
Successfully used in

WEED KILLERS
RODENTICIDES
INSECTICIDES
FUNGICIDES
LIVESTOCK DUSTS
HORMONE POWDERS

Literature and samples on request

R. T. VANDERBILT CO., INC.
Specialties Department
230 PARK AVENUE, NEW YORK 17, N. Y.

"TOX-EOL" for TERMITE CONTROL

TIME TESTED
TIME PROVED!

A large volume Termite Control Operator recently wrote us,

"Used your chemical since August, 1941, with an almost 100% efficiency . . . proud of results."

This is just one out of the many unsolicited letters we are constantly receiving proving the effectiveness of "TOX-EOL."

"TOX-EOL" — **Toxic base is chlorinated phenol plus. Is economical and not unpleasant to use. Effective for both wood and soil poisoning. Present cost less than creosote. Shipped in a highly CONCENTRATED liquid saving transportation charges.**

Send today for advertising and dealer co-operation plan.

CRE-O-TOX CHEMICAL COMPANY
Pioneers in the use of Chlorinated Phenols for termite control.
Now located in our new plant:
2670 BROAD — MEMPHIS 12, TENN.

LOCAL ORGANIZATION NEWS

Professional Exterminators' Association

Guest speaker at the PEA's inaugural fall meeting was Dr. C. C. Compton of the New York staff of Julius Hyman & Co. He not only discussed but answered innumerable questions relative to Chlordane, bringing the 40 in attendance up-to-date on such aspects of this important new liquid (also powder) insecticides as:

1 Length of its residual effect.
2 Its toxicity vs. other common insecticides.
3 Best methods of application.
4 Whether it will stain materials, corrode metals, damage linoleum.
5 Whether the PCO can use it in his daily service work without hazard to himself to others.
6 Its effect on the business of the PCO saleswise.
7 Types of insects against which it is effective.

Also on hand from Julius Hyman & Co. to answer questions were D. C. Van Winkle and B. G. Schmidt.

Jack Benmosche, of the Evins Exterminating Co., displayed samples of a Chlordane colloidal emulsion concentrate, discussed its economy and other advantages for PCO use; and announced his firm planned to market this product under the trade name of "Lucide."

A minute of silent prayer was offered for Charles Opitz, of the John Opitz Co., Inc., who passed away recently. His nephew, Henry Opitz now in charge of the business, was introduced.

A business meeting followed during which the Banner Exterminating Co. of Brooklyn was elected to membership in the Association. Problems resulting from a racketeering type of competition and the future business prospects of the PCO were mulled over. A committee was appointed to investigate the former; other committees were appointed to check into matters of health insurance, purchase of a stencilling machine, etc.

Joe Finneman, his usual chipper and thoughtful self, presided at the meeting which was held Monday evening, October 13, at the Hotel Commodore, N. Y.

Footnotes

The meeting "broke up" when "Bill" Farrell announced he had to get home to give his three-month-old daughter, Frances, a midnight bottle.

Alfred Friedman was unanimously elected and acclaimed permanent sergeant at arms, the reason being, we suspect, to keep him out of mischief.

Attractive and genial Miss Helena A. Whelan of the R. J. Prentiss Co., Inc., who had just returned from a Florida vacation, was an interested observer at the meeting.

Attendance Roster

Joseph Finneman, Pest Control Co.
J. L. Huberman, Scientific Exterminating, Co.
William Farrell, Effective Exterminating Co.
E. T. Thorpe, Tops Exterminating Service
William Thorpe, Tops Exterminating Service.
Dr. C. C. Compton, Julius Hyman & Co.
D. C. Van Winkle, Julius Hyman & Co.
B. G. Schmidt, Julius Hyman & Co.
Philip Haller, Virus Ltd., Inc.
Martin Grady, Boston Exterminating Co.
Max Rosenthal, Pests Magazine
Mr. Rosenfeld, World Wide Exterminating Co.
Helena A. Whelan, R. J. Prentiss & Co., Inc.
Irving H. Drucker, Banex Exterminating Co.
A. W. Albert, A. & G. Exterminating Co.
C. Milinder R. S. B. Compounding Co.
Al Friedman, Friedman Ext. Service
John Gohs, Metropolitan Vermin Ext. Co.
S. Diner, American Pest Control Co.
Charles Pomerantz, Bell Exterminating Co.
David Cantor, Bell Exterminating Co.
David Feinson, Atlantic Exterminating Corp. Inc.
E. J. Palmer, John Powell Co.
E. Mendel, Arpco Products & Ext. Co.
Alvin M. Weiss, Tri-Boro Ext. Co.
Harry Glick, National Exterminating Co.
Henry Opitz, John Opitz, Inc.
Samuel Cooper, D.D.T. Exterminating Co.
Jack Benmosche, Evins Exterminating Co.
Edward Fliegel, Star Exterminating Co.
Simon Buron, Ant-Roach Ext. Co.

New England Association

The meeting of the New England PC Assn. held at the Hotel Lenox, Boston, Mass., Oct. 15, 1947, was called to order by President Lester M. West, with twenty-three members in attendance.

The first item of business was the choice of a night for future meetings. Wednesday seemed to be favored and, the date for the November meeting was set as Wednesday, November 12, 1947.

The National Convention in 1951 was next discussed, everyone present voting in favor of trying to have it in Boston, and those going to the Philadelphia Convention were delegated to work in that direction.

The following were elected to serve as a nominating Committee to present a slate of officers for the December election; Mr. W. J. Mongeau, Chairman; Mr. J. Harrie Burdge, and Mr. A. Kaplan.

Mr. Eldredge spoke on the subject of State Legislation, and several members contributed their thoughts on the subject.

Mr. Walter Dykstra of the U.S. Fish & Wildlife Service told of pending city-wide rat programs in Portland, Maine, and Melrose, Mass.

The book, "Chemicals in Industry", which was presented to the Association by Rohm &Haas Co., was started on a Round Robin of those interested in reading it.

Those in attendance were

J. Newman, Newman Chemical Co. Holyoke, Mass.
J. O'Reilly, Monsanto Chemical Co. Boston, Mass.
B. W. Eldredge, Waltham Chemical Co. Waltham, Mass.
C. J. Hackley, Mattapan Insecticide Co. Dorchester, Mass.
W. J. Mugford, Mattapan Insecticide Co. Dorchester, Mass.
A. Kaplan, New England Exterminating Co. Lowell, Mass.
A. A. Mongeau, Pied Piper Service Farnumsville, Mass.
W. J. Mongeau, Pied Piper Service Farnumsville, Mass.
Frank B. Hines, Ace Exterminating Co. Salem, Mass.
C. A. Chafe, C. A. Chafe Co. Quincy, Mass.
E. P. Myers, N.E. Bug Exterminating Co. Brookline, Mass.
R. M. Houghton, Safety Fumigant Co. Boston, Mass.
M. A. Nugent Jr., Waltham Chemical Co. Waltham, Mass.
R. L. Keenan, Waltham Chemical Co. Waltham, Mass.
Hart Harris Jr.. S. B. Penick & Co. New York, N. Y.
Mark Weintraub, Astor Exterminating Co. Boston, Mass.
A. P. Lynch, Somerville, Mass.
G. R. Elliott, Ransford Insecticide Co. Worcester, Mass.
K. N. Cook, Ransford Insecticide Co. Worcester, Mass.
W. W. Dykstra, U. S. Fish & Wildlife Serv. Boston, Mass.
J. Harrie Burdge, Raymond, Maine
C. H. Corey, Waltham Chemical Co. Waltham, Mass.
Lester M. West, Rose Exterminating Co. Boston, Mass.

—Submitted by Kenneth N. Cook, Secy.

Missouri PC Association

The Missouri PC Association held its regular meeting September 20, at Daniel Boone Hotel, Columbia, Mo. The guest speakers were J. W. Hunt, of U. S. Public Health Service, Albert Happy, Senior Engineer of Missouri State Public Health Service, Andrew L. Crow and B. L. Culver, of American Cyanamid Co.

Mr. Hunt presented an outline of a course of instruction to be conducted by the U. S. Public Health Service at Atlanta, Ga. Members of the association were invited to attend the course. Mr. Happy, was asked to express himself as to how pest control operators could cooperate best with his department. Mr. Happy made several helpful comments and expressed the desire for full coperation with our industry.

General discussion on "Control of Carpet Beetles and Moth" followed, Mr. Bryant and Mr. Shuyler were asked to investigate and report on "DDT Fumigation." Roy McCullough gave a talk and an exhibit on

fumigation and fumigation equipment. Pigeon proofing and the elimination of pigeons was another subject of great interest to those who have to meet with this problem quite frequently.

The next meeting of the Association will be November 15. The election of officers will then take place as well as the discussion on "Pest Control and New Chemicals used in Pest Control Service."

Those who attended the meeting were:

F. R. Andrews, Andrews Exterminating Co. Kansas City, Mo.
V. A. Bryant, Walter B. McCloud & Co. St. Louis, Mo.
George A. Dyche, American Exterminating Co., Kansas City, Mo.
W. F. Exner, Termite Control Co. Webster Grove, Mo.
H. J. Hall, Advanced Exterminator Co. Springfield, Mo.
U. O. Hawks, Interstate Exterminator Co. Kansas City, Mo.
John Karleskint, American Exterminating Co., Webster Grove, Mo.
A. L. Linck, Paramount Fumigating Co. Kansas City, Mo.
James C. Logan, James C. Logan Exterminating Service, Cape Girardeau, Mo.
Roy H. McCullough, Modern Fumigating Co., St. Louis, Mo.
Charles A. Maly, Maly Bros. Termite Control Co., St. Louis, Mo.
J. C. Millspaugh, Millspaugh Chemical Co. St. Louis, Mo.
Arthur Ochs, Antimite Termite Proofing Co. St. Louis, Mo.
Thomas C. Raley, Getz Exterminators, Inc., St. Louis, Mo.
John H. Russell, Mexico Chemical Products Mexico, Mo.
Jac Shafer, Jac Shafer Pest Control Service St. Louis, Mo.
Reynold Shuyler, Termite Exterminating Co., Kansas City, Ks.
Margaret E. Ragan, Ragan Exterminators Kansas City, Mo.
Henry L. Sherman, East Side Exterminator Co., E. St. Louis, Ill.
Miss Lee A. Sain, ABC Exterminator St. Louis, Mo.
O. M. Weigle, Kingdom Chemical Co. Fulton, Mo.
W. F. Hoffman, Advanced Exterminator Co. Springfield, Mo.
Dr. Leonard Haseman, Dept. of Entomology, Missouri Univ., Columbia, Mo.
Albert Happy, Senior Engineer Mo. State Public Health Service, Jefferson City, Mo.
J. W. Hunt, U. S. Public Health Service, Kansas City, Mo.
Andrew L. Crow, American Cyanamid Co. Kansas City, Mo.
B. L. Culver, American Cyanamid Co. Kansas City, Mo.

Progress Report On Chlordane For Ant Control

Chlordane, a new organic insecticide, has been proved to give exceptionally good control of ants in turf in recent tests conducted by J. C. Schread, entomologist at the Connecticut Agricultural Experiment Station, New Haven. The material has been found to destroy effectively **Lesius niger**, the minature brown ant encountered more often than any other species in turf and the most serious nuisance of the ant family in such areas. Chlordane has also given excellent control of carpenter ants, mound building ants, soil-infesting ants and house ants. The material gives protection for from four to six weeks.

The home owner who has an ant infestation in his lawn or other turf area may use Chlordane in one of two ways. If the infestation is light he may spot treat the individual ant nests. One-eighth of a teaspoon of Chlordane 50 per cent wettable powder should be placed in the center of each ant hill and thoroughly watered into the galleries of the ant nest. Watering may be accomplished by using a small pressure spray after first removing the spreader from the nozzle so that a thin stream of water is obtained rather than a cone-shaped spray. Water poured slowly from a watering can, from which the sprinkler has been removed, may also be used. An alternate method is to add one ounce of Chlordane to each gallon of water in a small sprayer and, with the spreader removed from the nozzle, direct the stream of spray mixture into each ant nest.

In case of a more widespread infestation, the best treatment consists of a thorough watering of the turf area with a solution of Chlordane. The material can be applied with a hose and garden nozzle, the latter open as wide as possible at 100 pounds pressure. The proper proportions are 4 ounces of Chlordane 50 per cent wettable powder per 75-100 gallons of water for each 1,000 square feet of turf. This treatment should be followed by watering the turf with 50 to 60 gallons of clear water per each 1,000 square feet.

Insecticide Regulations and Registration Applications Are Issued

The U. S. Department of Agriculture today issued regulations under the Federal Insecticide, Fungicide and Rodenticide Act of 1947, and announced that applications for the registration of economic poisons under the Act are now being mailed to manufacturers of these poisons.

Rodenticides and herbicides must be registered with the Department by December 25, 1947, and other economic poisons (including insecticides and fungicides) by June 25, 1948. Department officials urged that manufacturers submit applications promptly, so as to facilitate the large volume of registration work under the Act.

Manufacturers subject to the act, who do not receive mailed copies of the application, may obtain copies from the Insecticide Division, Livestock Branch, Production and Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

The Act provides for the registration of economic poisons prior to sale or introduction into interstate and foreign commerce. It replaces the Federal Insecticide Act of 1910, and regulates the marketing of insecticides, fungicides, rodenticides, herbicides and devices. The former Act applied only to insecticides and fungicides and did not require the registration of these products.

Issuance of regulations under the present law follows the holding of a public hearing at Washington, D. C., August 25, on the proposed regulations. An extension of time through September 8 was given for the filing of suggestions and comments concerning the proposed regulations.

"Why Should a Cow of 1947 Have a Tail"

Prior to the advent of DDT insecticides, control of flies and other insects has constituted a major problem in the livestock industry. Sprays were available which gave temporary relief, but nothing had been found which protected the cattle over a prolonged period of time. This situation fostered the most intensive research, probably ever conducted in American agriculture, as related to the livestock field. The results of applying DDT compositions to livestock and dairy barns have been very effective.

Geigy Company, Inc., N. Y. manufacturer of DDT, has been closely associated with these field investigations and as a result of the work, pass along the following "Do's and Dont's" which can spell **profit** and **loss** to the livestock industry.

DO'S

DO - spray your dairy cows and beef cattle with appropriate DDT insecticides.

- spray your dairy barns, calf stalls and other shelters with DDT compositions.

- make the first application promptly if you haven't sprayed - repeat in 10 to 14 days on the cattle and every 6 to 8 weeks if necessary on inside wall and ceiling surfaces.

- keep the spray solution agitated.

- avoid applying spray to feed or milking utensils.

- use a reputable DDT product - follow local recommendations or those of the manufacturer for dosage.

- profit by increased milk and meat production, **Without extra feed**, through applying economically priced DDT wettable powders.

DONT'S

DON'T - wait until milk production is nil or cattle are skin and bones before destroynig the flies.

- use so little DDT that satisfactory results are impossible—follow recommendations of responsible authorities.

- mix your DDT insecticide with ordinary lime whitewash.

- mix your DDT insecticide with the ordinary paints.

- expect DDT to knock flies down immediately--wait a few hours--then check the window sills and floor for dead ones.

- frighten the cattle—spray thoroughly but avoid confusion.

- make spraying a substitute for normal sanitary measures

WHAT'S NEW IN PEST CONTROL-PERSONALS

Celebrates Second Birthday

This smiling, up-and coming, not to say handsome, young man, who celebrated his second birthday on October 28, is John (Jack) William Mahon, son of Tom and Nonnie Mahon. Tom, in case you are not a member of the NPCA, is assistant secretary of the association. In addition to his son, Tom is raising a mustache once again, an adornment which appears, disappears and reappears with the regularity of the seasons.

C. B. Freeman

With regret we announce the passing of C. B. Freeman, of Vancouver, B.C., owner of the Vancouver Fumigating Co. Mr. Freeman was a very active member of the Canadian Pest Control Operators Association, and was President of the Association at the time of his death.

We express our deep sympathy to the family.

Patent Issued

United States Patent No. D-147,599 has been issued to Leo J. Kelly and assigned to the National Sanitary Supply Association. This patent covers the design of the Association Emblem. Members of the Association in good standing, are permitted the privilege of using the emblem. The Association has recently embarked upon a national advertising program to publicise the emblem as a buying guide with the slogan, "Buy with confidence from the Janitor Supply House Displaying this emblem." The Association is prepared to prosecute vigorously any and all improper or illegal usage or infringement under the patent. Headquarters of the Association are 139 North Clark St., Chicago 2, Illinois. Leo J. Kelly is Executive Vice President.

Insecticides For Plants

Protection from pests such as red spiders, aphids and nematodes now can be given to plants by adding a powerful insecticide to the soil, as if it were a fertilizer. One pound of sodium selenate, according to Science Illustrated used on 1,800 square feet of soil is absorbed by the plants without harm, but insects that feed on the plants are killed. Selenium compounds, however, are poisonous to man, and this method of insect control can be used only on floral gardens, not on vegetables.

Antu Helps Solve Rat Problem

Despite thorough tests which proved Antu to be a valuable drug in the battle against rats, bait containing the new drug have been far more effective than anticipated, according to V. H. Davis of the Farm Bureau Cooperative Association. Cost of baiting has been lowered and results improved.

Secret of the sucess, he said, is the fact that the poison has no tell-tale odor to rats and it may be mixed with a variety of foods which rats consume. In one case, an Ohio farmer who was bothered with rats from a neighbor's farm, mixed Antu with canned dog food. He placed the mixture where rats had been seen and picked up 200 rats the next day.

Announce New Insecticide

An insecticide called Synklor, said to be four times as potent as DDT against certain insects, was announced recently by the United States Rubber Company. The poison is effective both internally and on contact, paralyzing the insect by the latter method, the company explained, adding that it also has prolonged residual action, clinging to walls, ceilings and window screens up to three months, and to outdoor foliage for two weeks.

New Dust Filter Developed

The American Optical Company of Southbridge, Mass., announced on Sept. 15 a new felt dust filter that strains out both disease-producing and poison dusts. The filter is treated chemically so that it catches anything down to twenty-four-millionths of an inch in diameter. That is smaller than a wave length of red light. The advantage is that the size of felt used for a filter for breathing can be reduced eight times smaller than previous filters.

Finical Termites

The termite is such a gourmet in eating and a sybarite in the matter of housing that scientists find it hard to please him in captivity. Judging by a communication in Science, the late Dr. S. F. Light and Miss Frances M. Weesner (University of California) found that Monterrey pine is filet mignon to the termite, but that even this must be prepared with care lest the insect go on a hunger strike.

Altered Monterey pine sawdust must be screened and sifted to remove coarse wood, bark and fine dust-like particles. Then agar mixed with sawdust of just the right temperature is placed in a one-ounce jar and sealed with agar. A hole is punched in the sawdust and agar. After the termites have crawled into the hole they obligingly seal it up and thus insure retention of the necessary moisture.

If the agar cap is not placed in the jar at right temperature, if there is too much or too little moisture, the termites may die. To prevent excessive development of micro-organisms, the jars must be sterilized before termite nests are built in them.

Miss Weesner says that termites turn up their noses at sawdust from green wood. Such a diet is deadly. Termites which had been found barely eking out an existence in a desert cactus or a log of oak flourished when introduced to Monterey pine.

Shaff Laboratories Inc.

Shaff Laboratories Inc., of Brooklyn, N. Y., have moved into their new plant and office, 177 Pacific St.

Powder Post Beetles

The Purdue University Department of Agricultural Extension, Lafayette, Indiana, has just recently published a bulletin on the subject of "Powder Post Beetles and Their Control" by G. E. Lehker.

A copy can be had by writing to the Purdue University requesting "Extension Bulletin 314".

WHEREVER THEY go ants leave a faint trail of formia acid which their fellow ants easily smell and follow.

Insecticide

A new insecticide comprising extract of black pepper and pyrethrin extracts or dusts, was patented by Edward Harvill of Yonkers, N. Y., and assigned to the Boyce Thompson Institute for plant research, of New York.

Used in a liquid spray base of petroleum origin, this insecticide (No. 2,245,530) may, it is said, be used "with exceptional killing efficiency." in combating flies, moths, aphids, bean beetles and the like.

Robar Pest Control Co.

1000 poisoned baits mixed with "1080" in scuffle cups were placed around in a feed house by Robar Pest Control Co., of Sioux City, Iowa, in a recent job. The net results as shown in the following picture were 163 dead rats.

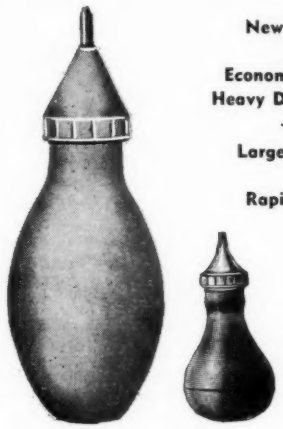
The men in the picture from left to right are: Robert H. McCord, Ray A. Anderson and Jo A. Robar, owner of the Robar Pest Control Firm.

CENTROBULB

QUALITY FOR THE PROFESSION

The Best Synthetic Rubber Gives Lasting Service

Brass Extension Nozzles For Extra Long Reach $1.00 Each



New Brass Tip For Economy, Neatness Heavy Duty Operation

Largest Opening For Rapid Refilling

Full Satisfaction Guaranteed

AVAILABLE NOW

In All Three Sizes

No. 1— 4 oz.—$3.00 Per Doz.
No. A— 8 oz.— 7.20 Per Doz.
No. B—12 oz.— 9.00 Per Doz.

CENTRAL RUBBER PRODUCTS CO.
821 BROADWAY NEW YORK 3, N. Y.

---

aerosols for 1948 use pyrenone aerosol concentrates

In effectiveness and economy they exceed any other available materials.
Their use incurs no toxicity or health hazards and no odor, irritation or other objectionable features.
Regardless of pressure container valve, or propellent choices, and regardless of whether cost limits are set at a minimum or at higher levels, Pyrenone Aerosol Concentrates contribute more knockdown value and killing power at less cost per dispenser and do so with complete safety.

D&O

The industry is inclined to have moderately high hopes for 1948 production and consumption of Aerosols if some of the prevailing uncertainties as to standards, availability of containers, etc., can be removed soon.
There are no uncertainties about Pyrenone Aerosol Concentrates (combining Piperonyl Butoxide and pyrethrins).
Supplies will be fully adequate and available without delays.

DODGE & OLCOTT, INC.
Insecticide Div.: 88 E. 42nd St., New York 17, N. Y.
General Offices: 180 Varick St., New York 14, N. Y.
Branches:
BOSTON, CHICAGO, PHILADELPHIA, ST. LOUIS, LOS ANGELES
Plant and Laboratories:
Bayonne, New Jersey, Canadian Agents:
Stead. Chem. Co. Ltd., 195 Fleet St. E., Toronto, Canada

GREATER *Kills* with CERTOX

REG U. S. PAT. OFF.

Rodent Seed, Ant Jelly, Arsenic, Carbolic, Pyrethrum, Cresylic, Red Squill, Derris Powder, and other effective chemicals that do a thorough job for the Pest Controller. The quality of CERTOX products remains unaffected by the national emergency. Prices, too, are near normal.

YOUR GUARANTEE:

All CERTOX products are manufactured according to exacting specifications under personal supervision of I. H. LUTTAN, B. S. A., Entomologist.

SPECIAL CONTRACT PRICES Available to Cover your Annual Needs.

YORK CHEMICAL CO.

Suppliers of Complete Exterminating Chemicals.

23 Dean Street, Brooklyn 2, N. Y.

PHOSPHOROUS PASTE

FOR ROACHES and RATS

SINCE 1874

J-O Phosphorous Paste is so compounded as to eliminate the hazard of fire and possesses advantageous qualities peculiar to itself. A properly made **Phosphorous Paste** such as **J-O** is absolutely safe to use. It cannot burn or set fire to other substances.

Phosphorous, however, remains basic in the compound because it is the most toxic chemical used in pest exterminating, being more toxic than arsenic, strychnine or thalium. Approximately one-tenth of a grain will kill a rat. Phosphorous is a slow poison, taking from 6 to 18 hours to kill. Due to its slow but positive action, the rat succumbs to this poison. He becomes very uncomfortable and, seeking fresh air and water, in most cases, leaves the premises and dies in the open.

For all species of roaches, this product is **UNEXCELLED.**

JOHN OPITZ, INC.

50-14 39th Street Long Island City 4, N. Y.

Manufacturers of Exterminating Products Since 1874

Pennsalt Announces Installation of Monochlorobenzene Unit

Wyandotte, Mich.—The Pennsylvania Salt Manufacturing Company today announced that it has installed at the Wyandotte plant a unit for the manufacture of monochlorobenzene, a basic material used in the manufacture of DDT.

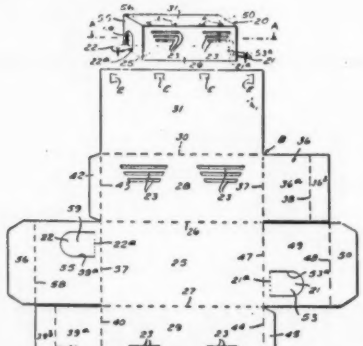
The new unit, said Pennsalt officials, will supply a large portion of the MCB required for Pennsalt's current DDT production in several plants throughout the country. The MCB plant was located at Wyandotte because it ties in well with chlorine production here, it was said.

Company officials pointed out that the MCB unit makes available by-products known as polychlors which can be used as a raw material in other chlorinated organics now under study in the Pennsalt Research Laboratories.

Pennsalt, which began DDT production during the war for the Armed Forces, was one of the first Companies making the new insecticide available for civilian consumption and in recent years has developed a wide variety of DDT formulations.

"Run For Vermin and the Like"

Registration No. 5,842 (U. S. Patent Office) is entitled "Run for Vermin and the Like." The invention is designed to provide a device for exposing poisonous substances or poisoned foods to vermin such as rats, mice an the like. The device is inexpensive to manufacture and simple to use. It provides a good safety factor against household pets which might fancy the poison.



Generally the "run" comprises a rectangular casing with entries at both ends. In construction a blank is cut and scored to outline a series of panels and flaps all connected so that the casing can be constructed from a single blank. By folding along scored lines ease of assembly is assured. Tabs are provided at either end for anchoring the run in position if desired. A number of insertable trays provide means for supporting the poisoned bait. The "run" may be made of any suitable material such as cardboard or light metal. It may be shipped flat and readily assembled.

Easy unobstructed entrance and exit to the "run" are formed when the blank is initially scored and cut.

Fumigating Pests—It is reported that fumigation with methyl bromide (1 pound to 4,000 cubic feet of space) effectively kills rats and mice in apple cold storages without causing visible injury to the fruit or affecting its taste.—(I.N.)

Class to Major in Roaches

State College, Pa.,—The mighty arm of education soon will be raised against the lowly cockroach and kindred household pests. Beginning this fall, the Pennsylvania State College will offer a new course, titled "Household Insects," demonstrating the latest techniques in eliminating troublesome pests. The course will be taught by Dr. Hubert W. Frings, associate professor of entomology and will be open to both men and women.

DDT—

The United States Department of Agriculture finds that DDT stimulates some plants—potatoes for example—in addition to keeping destructive pests in check; but it injures others, such as cantaloupes and the cucurbitaceae family. It appears to aid some insects directly and some indirectly by checking their parasites, or the parasites of their parasites, or even the parasites of their parasites' parasites, thus upsetting nature's balance of check and control. DDT takes a long time to disintegrate in the soil, and its end effects on fish, birds, livestock and man must all be considered. One basic rule is emphasized by the Federal entomologists: Never use more DDT than will accomplish the purpose.

Insecticide—

Methoxychlor, chemically related to DDT but only one-fortieth as poisonous to man and warm-blooded animals, is recommended as a protector of fruits and vegetables by Dr. W. H . Tisdale. Spelled out in full, methoxychlor is bis-(methoxyphenyl)-trichloro-ethane. It is now being made in limited quantities.

750,000,000 Rats Erased

The potential rat population of Newark has been decreased by 750,000,000 as a result of fumigation at the F. D. R. homes, Dr. Carl Baccaro, executive chairman of the Newark Housing Authority, estimated yesterday.

Baccaro said the rats, whose activities have been plaguing tenants at the F.D.R. low income apartments, "are now under control."

He said fumigation will continue and that he will recommend to the Public Housing Administration in New York that the homes be "rat proofed." The Health Department is making a survey of the area to determine where the rats breed and preliminary investigation centers around an adjacent soap factory and wharves behind the apartments.

Baccaro explained his 750,000,000 estimate by saying a male and female rat, if left alone will produce 2,500,000 progeny in three years, breeding every 31 days.

Rat-proofing would mean using plaster to cover up entrances to the pipelines leading into the building and putting fine mesh over wire screens in the cellars.

A poison powder developed by the Army to combat expected biological warfare by the Nazis against occupation troops is being used in Newark Baccaro said. It is called antu. Spread on the floors, it sticks to the feet of the rats. When they lick it off, they literally eat themselves to death.

On the Hoof

Wool may be moth-proofed while still on the sheep, says the Dept. of Agriculture. Tests have been made of fleeces of animals dipped in DDT preparations for louse and tick control.

Judge Wins Plea for Relief

He Has Ants in His Court

Lake County, Indiana, yesterday had upon its books the first appropriation in its history for the extermination of ants in a court of law.

Late Saturday night at the close of sessions that had lasted all week, Judge William J. Murray appeared before the County Council, with a mien more grave than he ever assumes upon the bench of the Criminal Court.

"Ants by the hundreds are disrupting the sessions of the Criminal Court," Judge Murray began. "They seem to originate in the basement of the court building in Crown Point, but the courtroom seems to be their stamping—or should I say champing?—ground.

Spectators Tormented.

"Smarting spectators jiggle in their chairs, shuffle their feet, and slap their limbs as these aemetes (Zool.) pinch and bite them.

"A woman witness who brought along a small packet of fudge found herself overrun by these biting, snapping pests.

"They have even invaded the bench and upon more occasions than one the court has found himself to his dismay to have ants . . . in his jurisprudence."

Contempt Citation Useless

Judge Murray stated that an invasion of the bench automatically puts the insects in contempt of court, but that it would be useless to hold them in contempt for the simple reason that the ants have no respect for the courtroom deputies who would have to arrest them.

"They bite the deputies and bailiffs, too", said the judge. "All the time."

The County Council was deeply moved by the judge's story and hesitated not at all in voting $3000 for the renovation of the Criminal Courts Building and for driving out forever the scourge from the halls of justice.

Fly Brings Out Firemen En Masse

Grants, N. M., (A. P.).—Jo An Rectenwald, new telephone operator in the Grants Exchange, brought out the city's volunteer Fire Department 100 per cent but there was no fire.

She was swatting flies last night and aimed at one on a new automatic fire signal switch, designed to blow the fire siren twelve times before stopping.

She missed the fly.

PIGEON PROOFING

BIRD NUISANCES ELIMINATED
EFFECTIVE - ECONOMICAL - LAWFUL
POSITIVE PERMANENT
Beware of Patent Infringements
OUR WORK GUARANTEED

STANLEY'S

ROOFING & BUILDING SERVICE, INC.
523 W. 184th St. New York City
WAdsworth 7-3300

Neal M. Draper, New St. Louis Solvay Manager

Solvay Sales Corporation has announced the appointment of Mr. Neal M. Draper as Manager of the St. Louis Branch. Mr. Draper, who has been a salesman in the St. Louis territory for the past 12 years, succeeds Mr. M. S. Johnson, who has been transferred to the Boston Office. Mr. Elmer Seener has been appointed Assistant Branch Manager of the St. Louis Branch.

The Solvay Sales Corporation handles sales of Alkalies and Chemicals manufactured by the Solvay Process Company. The Solvay St. Louis Branch covers the territory of Nebraska, south through Oklahoma and Arkansas and west through and including the Rocky Mountain States.

Q.—Why do termites attack houses? A. B. Q.

A.—By gnawing wood termites obtain both food for themselves and a dwelling for the colony. In cutting the forests and utilizing the wood for construction of dwellings, man upset the balance of nature, hence termites may be expected to lodge in houses built of wood.

Newspapers Question Box

Dodge & Olcott, Inc. Holds 5 Day Sales Conference

Something unique in the annals of the industry was established by Dodge & Olcott, Inc., in its five day Sales Conference recently held at the Hotel Pennsylvania from September 22 to September 26. As Mr. Myers, president of the organization described it in his welcome to the salesmen and representatives gathered from all over the United States, "We can call this event the eve of still a greater event, for in another year Dodge & Olcott celebrates its 150th anniversary."

It was more than a sales conference. It was also a sales clinic, a sales forum, and a refresher course all rolled into one. The sort of refresher course that professional men attend in order to keep up with new findings, new methods, and new techniques in their particular field.

An entire day was devoted to the inspection of the Dodge & Olcott Bayonne Plant. Here the sales force was brought up to date with the new plant developments including the new facilities for milling and extracting insecticide materials, probably one of the most modern in the country, and the new enlarged chemical research laboratories. Mr. Myers; Dr. L. Parker, plant manager; Dr. H. Wachs, research director; and Mr. Wing, assistant plant manager, personally conducted small groups throughout the plant and discussed various phases of production and manufacture.

A private parlor car was engaged to transfer the men from New York to the Dodge and Olcott Entomological Laboratories at Fairfield, outside of Baltimore, Md. Here the conferees, under the guidance of Dr. W. E. Dove, devoted a whole day to the examination and review of experiments demonstrating the effectiveness of Pyrenones and their freedom from any type of toxicological hazards.

What Makes Direct Mail Successful

Just off the press, this remarkable material gives you 24 elements necessary to the success of every direct mail piece—gives the advertiser a sound method of checking the missing elements before he goes to the expense of mailing.

Learn some of the secrets of direct mail success. It tells why direct mail often fails—it shows how, why and when direct mail proves successful.

How Will You Profit From "What Makes Direct Mail Successful"

You will have actual successful letters from which to adapt.

You will have basic answers to successful copywriting.

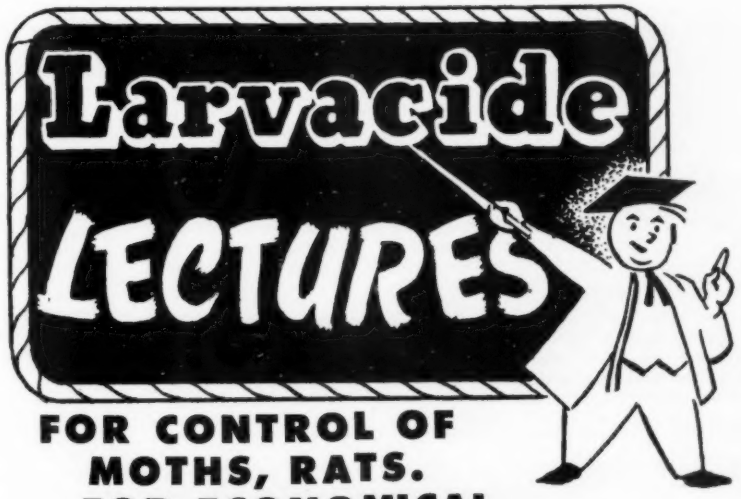
You will have the formula for successful direct mail testing.

You will learn the secrets of successful follow-up procedure.

You will have the facts on layout, mailing lists and markets.

Copy of the Direct Mail Check List, listing and rating the 24 elements necessary to success of every direct mail piece will be sent free.

What Makes Direct Mail Successful is **$3.00**, plus postage 10c. If not satisfied return the material and your money will be refunded. Write PESTS.



FOR CONTROL OF MOTHS, RATS. FOR ECONOMICAL INDUSTRIAL FUMIGATION

You Can't Beat **LARVACIDE**

the time-tested tear gas fumigant

It's the wise PCO who knows his LARVACIDE. Yes, LARVACIDE is the PCO's favorite for moth work, rat control and industrial fumigation. It's handiest for PCO's, too, because a few cans in the back of your car or truck equip you for small fumigation jobs any time or anywhere. Comes in handy 1 lb. dispenser bottles in sealed can 12 to case.

Also available in cylinders 25 to 180 lbs. Stocks in principal cities. Write today for FREE booklet PC9 describing LARVACIDE for Moth Work, Rat Control & Industrial Fumigation.

ISCO

Innis, Speiden & Co.

117 LIBERTY ST., NEW YORK 6

BOSTON CHICAGO CINCINNATI CLEVELAND OMAHA PHILADELPHIA

Additional Patents Relating to Pest Control

By DR. R. C. ROARK

2,423,144 (July 1, 1947; appl. Oct. 7 1944). EMULSIFIABLE HYDROCARBON OILS AND EMULSIONS THEREOF. George W. Gregg, South Bend, Ind.—Shell Development Company, San Francisco, Calif.—An emulsifiable oil comprises a major proportion of a hydrocarbon oil having dissolved therein an organic oil-in-water emulsifier and an alkali metal tetraorthophosphate in an amount sufficient to stabilize an oil-in-water emulsion of said emulsifiable oil.

2,423,284 (July 1, 1947; appl. July 17, 1945. In Peru Feb. 2, 1943). INSECTICIDES. Francisco E. Babbini, Lima, Peru—An insecticidal composition contains in intimate admixture, capsicum as an irritant agent, sabadilla seed as a source of toxic veratrine and methyl crotonic acid and a member selected from the group consisting of the sulfate, carbonate and hydrate of lime as an activator, said composition being effective against Dysdercus, aphis, roaches lice, fleas and the like.

2,423,291 (July 1, 1947; appl. July 3, 1943). TREATMENT OF ORGANIC THIOCYANATES. Joseph N. Borglin, Wilmington, Del. Hercules Powder Company, Wilmington, Del.—A solution of thiocyanates in petroleum ether is extracted with furfural, aqueous phenol, aniline or other immiscible solvent to remove undesirable odors.

2,424,029 (July 15, 1947; appl. Oct. 10, 1942). CYCLOPROPYLALKYL ETHERS AS INSECTICIDES. Herbert L. J. Haller, Washington, D. C.—United States of America, as represented by the Secretary of Agriculture.—A process for destroying insects comprises evaporating cyclopropyl alkyl ether having not more than three carbon atoms in the alkyl group in air surrounding the insects.

2,424,068 (July 15, 1947; appl. Feb. 12, 1942. In Great Britain Mar. 21, 1941). PROCESS FOR MOTHPROOFING FURS. David Traill, Ardrossan, and Andrew McLean, West Kilbride, Scotland.—Imperial Chemical Industries, Ltd.—A method of mothproofing furs comprises immersing the furs for a period of at least 16 hours in a bath comprising between 2 and 3 per cent of 40 per cent formaldehyde and between 3 and 4 per cent of 31 per cent hydrochloric acid in a saturated solution of common salt.

2,424,151 (July 15, 1947; appl. Mar. 27, 1944). RESERVOIR FOR ATOMIZERS. Llewellynn J. Clark and William F. Goosmann, Grand Rapids, Mich.—The Tanglefoot Company, Grand Rapids, Mich.—This invention relates to an insecticide dispenser.

2,424,174 (July 15, 1947; appl. Mar. 6, 1944). TOILET DISINFECTOR. Joseph M. Jensen Oakland, and Baldwin Vale, San Francisco, Calif.—This invention applies measured quantities of liquid disinfectants drop by drop, to surface of standing water in toilet bowls.

2,424,199 (July 15, 1947; appl. Nov. 14, 1942). 1,3-EPOXYARYLOFURAZANES AS PARASITICIDAL PREPARATIONS. William P. ter Horst, Pompton Plains, N. J.—United States Rubber Company, New York, N. Y.—A fungicidal composition comprises 5-chloro-1,3-epoxybenzofurazane and a carrier therefor selected from the group consisting of talc and clay and water in which the chemical is suspended.

2,424,421 (July 22, 1947; appl. Nov. 24, 1945). INSECT TRAP. William C. Temme, South Amboy, N. J.

2,424,468 (July 22, 1947; appl. Nov. 30, 1943). SPRAYING MACHINE. Emerson Orell Keathley, Tiptonville, Tenn.

2,424,644 (July 29, 1947; appl. June 15, 1944). N-BETA-CYANOETHYLALKANESULFONAMIDES. David Malcolm McQueen, Newark, Del.—E. I. du Pont de Nemours & Company, Wilmington, Del.—The patentee claims an N-betacyanoethylbutanemonosulfonamide. The N-beta-cyanoethyl amides are useful as insecticides.

2,424,860 (July 29, 1947; appl. June 30, 1944). INSECTICIDAL COMPOSITIONS. Alva V. Snider, Richmond and John L. Van Winkle, Berkeley, Calif.—Shell Development Company, San Francisco, Calif.—An insecticidal composition comprises a mineral oil and an alicyclic mono-ketoxime ester of an aliphatic carboxylic acid, e.g. isophorone oxime acetate.

2,425,185 (Aug. 5, 1947; appl. July 17, 1944). INSECTICIDAL COMPOSITION. Vernon E. Haury, El Cerrito, Calif.—Shell Development Company, San Francisco, Calif.—A household insecticide comprises a light hydrocarbon oil and N-(3,3,5-trimethylcyclohexyl) 3,3,5 trimethyl-2-cyclohexen-1-onimine.

2,425,238 (Aug. 5 1947; appl. Jan. 1 1945). FUMIGANT MIXTURES OF ETHYLENE BROMIDE AND METHYLENE CHLORIDE. Fred W. Fletcher and Eugene Kenaga, Midland, Mich. The Dow Chemical Company, Midland, Mich.—A fumigant composition includes as an active toxic ingredient a solution of from 2.5 to 20 per cent by volume of ethylene bromide in methylene chloride.

2,425,267 (Aug. 5, 1947; appl. Oct. 21, 1944). PROCESS OF MANUFACTURING ACRYLONITRILE FROM ACETYLENE AND HCN. Walter A. Schulze and John E. Mahan, Bartlesville, Okla.—Phillips Petroleum Company.—A process for the preparation of acrylonitrile comprises reacting hydrogen cyanide with acetylene in vapor phase at a temperature within the range of 770 to 970 degrees F. for a period of time within the range of 6 to 8 seconds in the presence of a catalyst comprising from 70 to 80 weight per cent zinc in the form of finely divided zin oxide supported on asbestos fiber.

2,425,432 (Aug. 12, 1947; appl. May 7, 1943). CHLORO CYANOBUTANES. Joy G. Lichty, Stow, Ohio.—Wingfoot Corporatien, Akron, Ohio.—2,3-Dichloro 2-cyanobutane and 1,2-dichloro 2-cyanobutane are useful as fumigants.

2,425,530 (Aug. 12, 1947; appl. Dec. 26, 1942). INSECTICIDE. Edward Harvill, Yonkers, N. Y.—Boyce Thompson Institute for Plant Research, Inc.—A contact insecticidal composition comprises piperine and pyrethin in a liquid spray base of petroleum origin.

2,426,349 (Aug. 26, 1947; orig. appl. Dec. 7, 1943 Divided appl. Sept. 27, 1945). p-CHLORO-ACETOPHENONE SEMICARBAZONE AS AN INSECTICIDE. Samuel I. Gertler and Herbert L. J. Haller, Washington, D. C.—United States of America, as represented by the Secretary of Agriculture—An insecticidal dust composition comprises p-chloroacetophenone semicarbazone in the form of an impalpable powder admixed with a solid diluent.

2,421,569 (June 3, 1947; appl. Oct. 4, 1944). INSECTICIDE. Frederick B. LaForge, Arlington, Va. and William F. Barthel, College Park, Md.—United States of America, as represented by the Secretary of Agriculture—An insecticidal composition comprises pyrethrum and 3,4-methylenedioxybenzyl n-propyl ether as a synergist therefor.

2,421,570 (June 3, 1947; appl. Oct. 4, 1944). INSECTICIDE. Frederick B. LaForge, Arlington, Va.—United States of America, as represented by the Secreary of Agriculture—An insecticidal composition comprises pyrethrum and alpha-(3,4-methylenedioxyphenyl)-tetrahydropyran as a synergist therefor.

2,422,019 (June 10, 1947; appl. April 21, 1944, in Canada May 18, 1943). SEED TREATING AND HANDLING DEVICE. Harold Jesse Kemp, Swift Current, Saskatchewan, Canada.

Featuring the NPCA Convention Proceedings at Philadelphia last month, were discussions of how best to meet the impact of residual chemicals. Highlights of which will be published in our December Issue. Subscribe now and be assured of reading this All-Important Issue.

THE
BUSINESS & TECHINAL MAGAZINE
OF THE
PEST CONTROL INDUSTRY

PESTS and THEIR CONTROL is the business and technical magazine of the pest control operator segment of the pest control industry. It competes with no other pest control publication. Edited exclusively for America's PCO's since 1933, it covers completely that part of the industry responsible for the bulk of the pest control service sales.. Rates based on 1900 (all paid) circulation are nominal compared with the buying potential of its readers. The character of its editorial policy assures intense reader interest and intense reader interest generally means the ultimate in returns for the advertiser's dollar.
For more complete details as to coverage, rates, etc., please write

PESTS AND THEIR CONTROL
1200 Oak
Kansas City 6, Mo., or
120 Liberty Street,
New York City 6, N. Y.

— Calendar of Meetings —

National Sanitary Supply Association, Western Regional meeting, Los.. Angeles, Calif., Hollywood Roosevelt Hotel, November 12th and 13th, 1947.

NAIDM's 34th Annual Meeting at Lord Baltimore Hotel, Baltimore, December 1-3, 1947.

National Sanitary Supply Association, Eastern Regional Meeting, New York, Park Central Hotel, December 4th and 5th, 1947.

Chemical Industries Exposition, Grand Central Palace, New York, December 1-6, 1947.

American Association of Economic Entomologists (annual) December 27-30, 1947; Congress Hotel, Chicago, Ill.

Entomological Society of America (annual) December 27-30, 1947; Congress Hotel, Chicago, Ill.

NJPCA will hold short courses in "Fundamental Chemistry as It Applies to the PCO's" at Rutgers University, January 13 to 31, 1948.

IF YOU HAVE TROUBLE
with rats not taking your baits then get acquainted with
LENZ RED SQUILL RAT PASTE
and your trouble will be over. This is a soft paste, easily spread. Kills all types of rats. Excellent results. 23% fortified red squill.

Spread it over full slices of bread then cut this into small pieces and you have something here—a bait rats seldom pass up. Each pound good for 400 baits.
5½ pound can $7.15
HANDY KIT SIZE 1½ Pounds Each $2.17
We prepay all transportation charges. You pay only for the cost of the goods when it arrives. Or send cash and deduct 5%.

RATDEW, a concentrated arsenated liquid. One quart mixed with water makes one gallon of finished finely scented poison for rats and mice. Good in stores, factories, warehouses, etc., where lack of water offers a good medium for extermination.
GALLON CONCENTRATED RATDEW.....$8.00
Terms same as above.
LENZ LABORATORY Sycamore, Ill.

P.C.O.'s Make Poison Bait and Trapping Devices IRRESISTIBLE to Rats and Mice with the amazing
Lexco
It's the scent they go for **RODENT LURES**
CARNARAT SPECIAL—a highly effective lure for the common brown (Norway) rat. Use sparingly; a few drops to each pound of poisoned bait. **1 Pint $4.75**
CARNARAT—an outstanding lure for rats of all species, except the brown (Norway) rat. Use as above. **1 Pint $4.20**
WISCONE—a specific lure for both house and field mice. Use as little as 1 to 1½ oz. to 100 lbs. of seed or any other poisoned mouse bait. **1 Pint $3.75**
CHECK WITH ORDER. SHIPPED PREPAID U. S. AND CANADA
LINDENBERG EXTRACT CO.
424 SOUTH BROADWAY LOS ANGELES 13, CALIFORNIA

HOUCHIN'S INSECT POWDER DUSTERS
Made of Heavy Durable Metal Gold Lacquered
Capacity 2 oz. Powder
$2.00 Per Doz.
$20.00 Per Gross
Packed 2 Doz. to Box

No. 999 "Cyclone"
Thos. W. Houchin Corp.
87-101 Ferry St. Jersey City 7, N. J.

WRITE FOR THESE BOOKLETS

NEW SAF-T-CUP AIDS PCO

A scientifically designed poison dispensing cup with suction bottom making it practically tip-proof, is now available and recommended, it is stated, for use with 1080, arsenic water, ant syrup, etc. Guaranteed leak-proof, the Saf-T-Cup holds its supply of liquid poison until completely evaporated. Words "Fatal Poison" encircling skull and cross bones are imprinted on cup in special

fade-proof ink which imparts no odor or taste. Cannot be mistaken for food dispensing cups. This one ounce cup holds 3/4 ounce easily without filling to the brim. Readily accessible to ants when used with ant syrup. Low lip enables ants to crawl over top, avoiding the punching of holes in sides. The use of the new Saf-T-Cup is welcomed by Insurance Underwriters, it is stated. Free sample on request.

EXTERMINATOR'S EQUIPMENT AND SAFETY SUPPLY CO.,652 W. Walnut Street, Chicago 6, Illinois.

Chlordane Bulletins

The following two new technical bulletins are available on request from Julius Hyman & Company, Denver, Colorado, manufacturers of OCTA-KLOR brand Chlorodane insect toxicant:

Technical Supplement No. 2 concerning the preparation of Chlordane emulsifiable concentrates.

Technical Supplement No. 205—Chlordane for the Direct Control of Truck Crop and Garden Insects.

A new synthetic organic detergent and wetting agent booklet has been recently published, by The Miranol Chemical Co., Inc., 2 Ford Avenue, Milltown, New Jersey.

A copy of this interesting and informative booklet can be had by writing to THE MIRANOL CHEMICAL CO.

The Entomologists' Joke Book

There are so many new faces in our membership that we felt it timely to refer to the fact that there may still be procured copies of this splendid book of humorous writings and comments . . . . unwittingly written . . . of an otherwise highly important science. The preparation of this book was done by Professor J. J. Davis, who has carefully compiled and selected much interesting material. This book may be purchased for $1.00 plus 10 cents in stamps to cover mailing postage. No PCO should be without this book in his library. Also order now before you forget—very simple to enclose a $1.00 bill and 10c in stamps.

ORDER THROUGH PESTS'

1200 OAK ST. KANSAS CITY 6, MO.

FOR THE FOLLOWING PUBLICATIONS
WRITE SOLVAY SALES CO., 40 Rector St., N. Y. C.

SOLVAY PRODUCTS

48-page booklet in colors and illustrations covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY.

RAT GLUE AND BOARDS CIRCULAR

Discusses use of rat glue boards as a means for effective rat control, etc.

WRITE ELKAY PRODUCTS CO., 323 West 16th St., New York City.

DDT BOOKLET

A new eight-page color booklet has been prepared by the Pennsylvania Salt Manufacturing Company to describe its five Penco DDT products for the agricultural and insecticide industries and give some basic facts about DDT itself.

The booklet explains exactly what DDT is, how it can best be used, what limitations it has and where it excels in insect control.

The booklet contains full instructions for preparing various dilutions of the five products as well as complete instructions for their use, and what insects they control.

WRITE PENNSYLVANIA SALT MANUFACTURING COMPANY, Dept. P., 1000 Widener Building, Philadelphia 7, Pa.

FIRE PROTECTION

Brochure gives instructions for application of the various methods of impregnating with "Checkfyre" fire protection. All absorbent materials, it is stated, can be made non-inflammable by impregnating with this colorless treating solution. Can be used for clothes, textiles, lumber, timber, excelsior, straw, etc. Associated Sales & Supply Co., Dept. P, 5137 Southwest Avenue, St. Louis 10, Mo.

FOR THE FOLLOWING PUBLICATIONS
WRITE WOOD TREATING CHEMICAL CO., 5137 Southwest Ave., St. Louis 10, Mo.

WOOD TREATING CHEMICALS

Leaflet, color-illustrated, describes pentachlorophenol-based wood-treating chemicals available in ready-to-use or concentrated form for wood preservation, termite prevention and dimensional control. Also discussed are such methods of wood impregnation as: vacuum-and-pressure, hot and cold open tank and cold open tank.

Effective Control of Termites and Lyctus Beetles

Illustrated leaflet discusses a few basic facts about subterranean termites, such as how to recognize termite attack, how to control subterranean termites and prevent attack.

Properties of Terratox Formulations also discussed.

WOOD PRESERVATIVES

Discussed are several products for the control of decay, blue stain, termites, powder post beetles, swelling, warping, checking, shrinking, moisture absorption, grain raising. Illustrated.

Write WOOD TREATING CHEMICALS CO., 5137 Southwest Avenue, St. Louis 10, Mo.

IMPROVED PYRIN No. 20

Technical bulletin discusses Improved Pyrin No. 20 vs. Pyrethrum Extract No. 20. Sesamin as a synergist for pyrethrum, principal characteristics, suggested formulae, roach test (USDA method), etc. Sample on request. John Powell & Co., Inc., 1 Park Ave., New York 16, N. Y.

ANTU

Antu Leaflet discusses Antu as a rodenticide, what it is, how to use, how to apply, toxicity, etc.

JOHN POWELL & CO., Inc., Dept. P., 1 Park Ave., New York 16, N. Y.

INSECTICIDES

Insecticides. 8-page bulletin on fully automatic blending systems for "More Effective Insecticides," with photographs of comparative tests on well-known types. **Bulletin 1-846.** Sprout-Waldron & Co., Muncy, Pa.

NEW M.S.A. INDUSTRIAL GAS MASKS BULLETIN

A new 4-page bulletin describes and illustrates Mine Safety Appliances Company's Industrial Gas Masks for protection against individual industrial gases or combinations of gases, smokes, vapors, and dusts (with the exception of carbon monoxide and illuminating gas.) For many applications the masks are U. S. Bureau of Mines Approved.

The M.S.A. "All-Vision Facepiece," featured in the new bulletin, it is stated, permits unobstructed vision covering all normal viewing angles. Inbuilt fogproof construction prevents moisture condensation on the large, specially-contoured lenses, which are made of shatterproof glass and are replaceable and interchangeable. A minimum of dead air space cuts down re-breathing of exhaled air. The "All-Vision" Face-piece is made of molded special rubber—comfortable and easy to wear. Providing gas-tight fit on any face without "pressure points," the Facepiece insures worker safety and contributes to efficiency on the job.

The M.S.A. "All-Vision" Facepiece is available equipped with a Speaking Diaphragm which insures perfect communication between men, over the telephone, and through speaking tubes.

The new bulletin includes the broad selection of canisters available for use with M.S.A. Industrial Gas Masks, and a comprehensive list of gases against which protection is afforded.

For safety in low concentrations of poisonous and irritant gases, fumes and dusts, the M.S.A. Canister-Type Half-Mask, described in the new bulletin, may be used. The Half-Mask, like the "All-Vision" Face-piece Mask, does not interfere with goggles or headgear, it is stated.

M.S.A. Industrial Gas Masks are furnished —complete with harness, canister, facepiece and connecting tube—in strong carrying cases of hard vulcanized fibre.

For a copy of the new bulletin on M.S.A. Industrial Gas Masks, address this publication or direct to Mine Safety Appliances Company, Dept P, Braddock, Thomas and Meade Street, Pittsburgh, Pennsylvania.

Circular describes a new chemical which, it is claimed, will mothproof and flameproof at the same time. Circular also states that it is easy to apply, that a single application is good for the life of the fabric and that it is not affected by solvent cleaning. Laundered or steam-cleaned fabrics, however, require re-treatment. May be applied to carpets, rugs, upholstered furniture, drapes, clothing, mattresses, auto upholstery, linen, cotton, calico, veiling, rayon, velvet, jute, theatre scenery, etc. Flamort Chemical Co., Dept P., 746 Natoma Street, San Francisco 3, Calif.

Business Opportunities

(Classified)

RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum, $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

Replies to advertisements where box number only is indicated should be addressed c/o PESTS, 1200 Oak St., Kansas City 6, Mo., giving box number as well.

Are you qualified or can you qualify to operate a branch office on a profit sharing plan for one of the largest pest control firms in the country? Answers will be kept in strictest confidence. State qualifications, years of experience and other qualifications. Box 25, Pests.

EXTERMINATORS CHEMICALS

RUMETAN (Zinc Phosphide)
FOR RAT CONTROL

(The ideal poison for Rats, Mice and Mole Crickets Effective and Economical)

Sodium Fluoride, White and Tinted
Sodium Silico Fluoride
Pyrethrum Powder
Sodium Arsenate, etc.

Write for Details

Pfaltz & Bauer, Inc.
EMPIRE STATE BUILDING, NEW YORK

Termite Control Operators
SPECIAL INTRODUCTORY OFFER
TERMICIDE NO. 46

Soil Sterilizing Compound Concentrate
(Copper Napthenate Base)

Kills and controls subterranean termites. Dilutes 9 to 1 with water. Pleasant odor. Harmless to operator. Non-injurious to plants and shrubbery. Non-corrosive to equipment.

PRICE: 65c per gallon in 55-gallon drums.
F.O.B. Los Angeles

ATLANTIC VARNISH COMPANY
4829 Huntington Drive North **Los Angeles 32, California**

THALLIUM SULPHATE 99.5%

Prompt shipment from Stock

MERCANTILE IMPORT & EXPORT CORP.
21 East 40th St., New York 16, N. Y.
Telephone Lexington 2-2445-6-7

PETERMAN
PROFESSIONAL POWDER

CONTAINING PIPERONYL CYCLOHEXENONE IS HIGHLY EFFECTIVE AGAINST:

ANTS
FLEAS
ROACHES
SILVERFISH
BROWN DOG TICK
OTHER CRAWLING INSECTS

Write for Price List

WILLIAM PETERMAN, INC.
411 WILSON AVENUE
NEWARK 5, N. J.
Specialists in Insecticides Since 1893

MAGIKIL ANT BAIT JELLY

Easy TO USE

KILLS ANTS

CONTAINS THALLIUM SULPHATE

Packed in Convenient Service Containers

ANT TRAPS, 1, 3 & 7½ oz. Tubes 10 LB. Jars

Used professionally it assures customer satisfaction.

Preferred by discriminating PCO's.

For safety in service work use MAGIKIL ANT TRAPS.

Lethelin Products Co., Inc.
MOUNT VERNON **NEW YORK**

--BOOKS--

Broaden Your Knowledge—Increase Your Proficiency—Help You in Your Business

Please remit check with order as this will save additional expense and time.

A list of new books includes:

People
Price $2.50 plus 15c postage

Chemistry of Insecticides and Fungicides
Price $4.00 plus 15c postage

Helping People Buy
Price $2.50 plus 15c postage

Strategy In Selling
Price $6.00 plus 20c postage

Unbidden House Guests

By DR. HUGO HARTNACK

The volume discusses about 2,000 house guests. It consists of 4 parts:

I. General Part: What are housepests today? Borderlines of Housepest field. Climate of the House. Housepests worldwide. Influence of the house on the housepest. Spoorology (Diagnostic) of Housepests. Damage by housepests (54 pages of pictures). Pests and Wastes. Fighting housepests outdoors. Exterminating methods. Formulae. Pages: 238.

II. Plants as Housepests. Bacteria. Molds which live in the house. Timber rot, fungus. What plants do to housepests and what housepests do to plants and plant products. Pages: 62.

III. Lower Animals. Protozoa, worms, snails, millepedes, spiders, mites, many others, as far as they are housepests. Pages: 112.

V. Backboned Animals. Chordata, coldblooded and warmblooded. Rodents, rats and mice take 56 pages. Formulae, Index. Pages: 148.

Price $12.00, plus 25c postage

Substitutes

By H. BENNETT

Price $4.00 plus 15c postage

A handbook of substitutes and alternatives for chemicals, fibres, metals and other commercial products including a plan for choosing proper substitutes. This book is the result of the author's wide knowledge of substitutes and alternatives for numerous products in diverse industrial fields.

CONTENTS: Substitute Requirements; Formulation; Proportions; Methods of Manufacture; Costs; Use of the Finished Product; Testing; List of Substitutes and Alternatives.

"How to Know the Insects"

A very valuable book for every pest control operator. This book, with its 140 pages and more than 250 careful drawings, is an excellent reference book for P.C.O.'s as well as for experienced entomologists.

Price for spiral binding.....$1.50 plus 15c postage

Practical Emulsions

By H. BENNETT

Price $8.50 plus 25c postage

An authoritative handbook which concentrates upon the more practical side of manufacturing, using and evaluating emulsions for industrial use and commercial distribution.

CONTENTS: Emulsifying Agents; Types of Emulsions and Foams; Methods; Formulation, Equipment; Stability; General Technical Emulsions; Dispersing Agents and Wetting Agents; List of Emulsions; List of Demulsifying and Defoaming Agents; Agricultural Spray Emulsions; Cutting Oils, Soluble Oils, Miscible Oils; Emulsifying Agents; Bituminous Emulsions; Cleaners and Soaps; Cosmetic and Drug Emulsions; Defoaming Agents; Food Emulsions; Gasoline Emulsions; Lacquer Emulsions; Leather Treatment Emulsions; Lubricant Emulsions; Medicinal Emulsions; Paint Emulsions; Paper Processing Emulsions; Polish Emulsions; Resin and Rubber Emulsions; Textile Emulsions; Miscellaneous; Dispersions.

Practical Tree Surgery

By MILLARD F. BLAIR

An authoritative manual indispensable for Spray Operators and Tree Surgeons. It gives valuable information pertaining to the association between trees, fungi, and insects; and discusses the means employable in obviating some of the most serious injuries to them. Contains 89 excellent illustrations and line drawings.

Cloth binding .....$4.00 plus 15c postage
Special binding ..... 5.00 plus 15c postage

Spray Chemicals and Application Equipment

The new book "Spray Chemicals and Application Equipment" is the result of six years research and collection of data by Wayne B. Fisher, B.S.A., Purdue University, chemical sales representative, and commercial horticulturist, cooperating with Dr. J. A. McClintock, Professor of Horticulture, Purdue University (co-author).

The book "Spray Chemicals and Application Equipment" is divided into two parts. Part one gives the interesting historical background of many chemicals and detailed discussions and photographs showing how they are manufactured. In addition, much discussion is devoted to methods of using spray chemicals, to insects and diseases controlled by the specific chemicals, and to methods of improving present day pest control practices.

Part two is a complete discussion describing almost every type of sprayer and duster available to the public for use in applying spray chemicals. About 300 illustrations are included in this section, and all types of equipment is shown ranging from the simplest atomizer sprayer to the largest commercial sprayers and airplane dusting equipment.

Price $4.00 plus 15c postage
Foreign $5.00 plus 35c postage

DDT and the Insect Problem

By James C. Leary, Pres. Nat'l Assn. of Science Writers; William I Fishbein, Epidemiologist; and Lawrence C. Slater.

DDT and the insect problem is a new book just off the press. This volume is a complete and up-to-date facts about development, applications and effectiveness of today's No. 1 insect killer—DDT.

The book covers crop protection, animal husbandry and elimination of household insects, destruction of garden pests, etc., pointing out the effect of DDT on various types of insects.

Price $2.50 plus 15c postage.

The World of Insects

By CARL D. DUNCAN
Professor of Entomology and Botany
and GAYLE PICKWELL
Professor of Zoology
SAN JOSE STATE COLLEGE

In this new book the authors give a general view of a vast and fascinating world.

Comparatively brief and nontechnical, the book reviews the many fields upon which the insect impinges, discussing such topics as insect structures, how insects grow up, insect food and feeding habits, insect food-getting devices, how insects reproduce themselves, how insects get air, how insects move, how insects are protected, insect voices, insect fitness, insect orders, social life among the insects, the value of insects, injurious insects and their control, where to look for insects, rearing insects, and how to collect and preserve insects.

One of the outstanding features of the book is the collection of 194 unusual illustrations, including many striking photographs original with the authors.

393 Pages, 6x9, Illustrated.....$4.00 plus 15c postage

Concise Chemical and Technical Dictionary

PUTS 50,000 ESSENTIAL WORKING FACTS AT THE FINGERTIPS OF THE NATION'S TECHNICIANS.

1120 pages - 6X9 - $10.00
Postage 25c

This basic work of technical reference, in dictionary form, gives the lastest, most accurate data obtainable about processes, apparatus, machinery, terms, materials, finished products, practices, elements, composition, uses, properties, trade names, formulae, etc., a veritable library of indispensible professional knowledge. Included are several useful tables.

For Immediate Delivery - Order Today
PESTS AND THEIR CONTROL
1200 Oak St., Kansas City 6, Mo.

Insect Enemies of Shade Trees

By GLENN W. HERRICK

This book discusses primarily the problem of preservation of shade trees from insect pests also describing accepted methods of fertilizing shade trees. It is intended for pest control operators engaged in the business of treating and caring for shade trees, and for all others interested in preserving shade trees. The book discusses in detail all the important insect enemies of shade trees east of the Rocky Mountains, and most of those on the Pacific coast. The book is illustrated with 350 photographs and drawings. Contains 417 pages. **Price, $5.00 plus 15c postage.**

Termites & Termite Control

An indexed reference book produced by the University of California Termites Investigation Committee of engineers, scientists, and business men in six years' collaboration.

Contains the latest researches in facts on termites, the latest practical methods for exterminators, builders and architects. Contains 795 pages, including index; profusely illustrated.

Price (the new edition), Cloth Bound.....$8.50
Plus 30c postage

The New 1945

Chemical Formulary—Vol. VII

By EDITOR-IN-CHIEF, H. BENNETT

Price $7.00 plus 25c postage

Volume VII of "The Chemical Formulary" includes thousands of the best and most practical formulas, compiled by authorities and experts in each field of industry. Each formula is new, and different from those in previous volumes.

Formulas for pest controls are extensive, and are the results of the most recent research. They include general and agricultural insecticides, parasiticides, larvicides, vermin exterminators, cattle grub control, Ant poison, mothproofing emulsions, fly control spray, Japanese beetle larvae control, lawn grub control, roach powder, silver fish poison, hide and skin beetle control, insect repellents, horticultural sprays, and Rotenone-Derris substitutes.

This valuable book describes and explains the latest commercial methods and processes. It will bring you valuable data and ideas that would otherwise be accessible only after consulting dozens of other books.

Virus Diseases in Man, Animal and Plant

A survey and reports covering the major research work done the last decade.

The book gives a survey of the monetary status of virus investigation with special consideration of the most recent literature, especially foreign. One of the most important books of its kind offered.

Price $5.00 plus 15c postage

The Chemistry of Synthetic Substances

By EMIL DREHER

"A brilliant summation of the latest research in the chemistry of synthetic substances. We recommend this book highly for its completeness. It will satisfy those who have waited for a thoroughly competent dissertation in the field."

Price $3.00 plus 15c postage.

SELLING YOURSELF AT ITS BEST

A book for those who desire to appear before the public. Whether your are a Public Speaker, Businessman or a Salesman, you should have this outstanding book.

Nothing Like It

UNTIL now there has never been a book like it published or offered to the public.

READ about this remarkable and comprehensive book with its varied and inclusive illustrations. This powerful book with illustrations and suggestions shows

How to be more forceful in selling yourself to the public . . . . .
How to see your self in action . . .
How to dramatize your abilities.

Price $3.25

PESTS AND THEIR CONTROL
1200 Oak Street, Room 201, Kansas City 6, Mo.

ORDER FROM PESTS, 1200 OAK STREET, KANSAS CITY, MO.

NOW IS THE TIME

to push your ANTU PRODUCTS for

RAT CONTROL

Right now—when Fall is here—is the time of the year when rats enter buildings in large numbers. NOW is the time they start to do extensive damage. YOU can help save large sums of money by offering the proper treatment with the proper material.

Two of the most effective means of controlling rats are by the use of tracking poisons and poison baits. These methods may be used alone or together—depending upon the situation.

NOW IS THE TIME TO ORDER ANTU

POWCO BRAND ANTU is the ideal material for use in both tracking poisons and poison baits. It is sold in the pure state for use in baits and for further processing into tracking powders. POWCO BRAND ANTU DUST 20% is sold as a finished tracking powder but may be similarly used in the manufacture of baits as a partially extended toxicant.

Check your ANTU supplies now. The season for heaviest rat infestations is starting.

Write today for complete information and prices

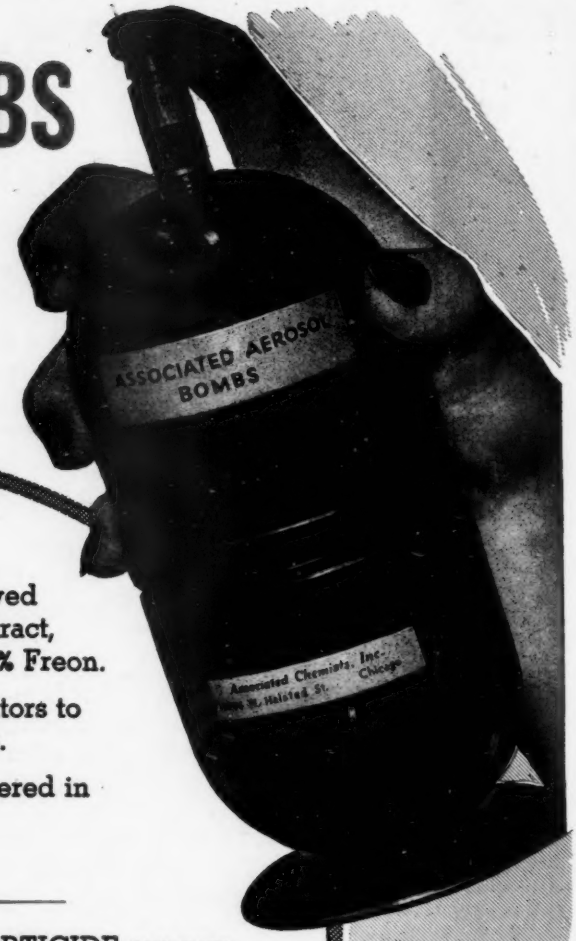
John Powell & Co., Inc.

ONE PARK AVENUE, NEW YORK 16, N. Y.

SALES OFFICES: CHICAGO • SAN FRANCISCO • PITTSBURGH • PHILADELPHIA • ST. LOUIS **Canada:** CHARLES ALBERT SMITH, LTD. • TORONTO • MONTREAL
IN ARGENTINE: JOHN POWELL Y CIA. CONDARCO 1535, BUENOS AIRES, ARGENTINA. TELEPHONE 59 PATERNAL 0021

POWCO BRAND PRODUCTS: *Antu • Pyrin R • Pyrin D-20 • JP #10 • JP #25 • JP #30 • JP #50 • JP 50W • Pyrethrum Powders and Extracts • Stimtox "A" • Rotenone Powders • Sabadilla Aerosol Formulas • 2, 4-D • BHC (Benzene Hexachloride) • HETP (Hexaethyl Tetraphosphate)*

AEROSOL BOMBS FOR RESALE



Filled with Standard Approved Insecticide—2% Pyrethrum Extract, 3% D.D.T., 10% Solvents and 85% Freon.

At prices which will enable Distributors to handle the bombs at attractive profits.

Supplied with Distributor's label if ordered in sufficient quantities.

Packed 24 to a Shipping Carton.

HI-TOX, MORTICIDE and SUPER-MORTICIDE are now obtainable with D.D.T. added. NO INCREASE IN OUR PRICES.

D.D.T. Solutions containing from 5% to 50% D.D.T. Technical Grade.

D.D.T. Powders with 10% to 50% D.D.T. Technical Grade.

MORTOLIN—Concentrate for Moth-proofing Compounds.

Write our office nearest you for full particulars.

Associated Chemists, Inc.

1906 N. HALSTED STREET
CHICAGO 14, ILLINOIS

EASTERN OFFICE: Velsor Wright Company, 8 West 40th St., New York 18, N. Y.
TEXAS OFFICE: The Carroll Company, 1323 Wall Street, Dallas, Texas